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General Article

JOHNE'S DISEASE*

Its Economic Significance and Early Detection

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You in Scotland are in a somewhat fortunate position in that the inroads of Johne's disease have not as yet reached the dimensions which they have in England. I say "as yet" because I have little doubt that its spread is only a matter of time if the experiences which we have had in the South are of any value, and such spread will inevitably occur unless some drastic measures for its proper control on a national basis are put into operation. That Johne's disease does exist in Scotland there can be no doubt, and I have myself evidence of its presence in certain districts.

It is known to exist in practically every European country, in India, Australia and in America. It can indeed be fairly described as being widely spread in most countries where cattle are reared. Until a few years ago, and in many districts even to-day, diagnosis was not arrived at until advanced clinical symptoms had made their appearance and confirmation was reached by a *post-mortem* examination or by microscopic examination of rectal scrapings.

Some idea of the extent of the disease in such cases must have conjured up in the minds of some of those who made such examinations, visions of an exceedingly long period of at least indifferent health, possibly without wasting; but no one could imagine, if he gave the subject careful thought, that such a state of affairs could exist without producing some effect on the animal's health, or possibly some change in the general appearance of the animal, the cause of which may not have been previously suspected, many months prior to the appearance of clinical symptoms.

I question very seriously whether this point of view has received the attention at the hands of the clinician it deserves.

There are observant and intelligent stock-owners who, as a result of many years of practice, will tell you that they are able to detect a beast in the early stages of the disease by a certain alteration in conformation and I have knowledge that some of them at least have made no idle boast. Such men are, however, few and far between, but what of the majority who either through lack of experience or opportunity do not possess this accomplishment? I believe that in many instances the so-called "bad doer" and the indifferent milker can in this way be explained, and if my opinion is correct it is not a difficult matter to arrive at a rough estimate of the annual wastage experienced by a country so well populated by cattle as ours, populated as it is by some of the best cattle in the world and in which the disease we are discussing is so widespread. Loss of condition and loss of milk supply are in themselves two very important items deserving of the close attention of agriculturists and veterinarians alike. Their importance should be all the more stressed because as a rule their cause is not even suspected. No cattle raising country can stand the huge financial strain imposed upon it as a result of the existence of such conditions. As is well known, the "bad doer" and the poor milker are usually disposed of by sale to some other equally unfortunate and similarly ignorant purchaser and where the cause of such conditions is chronic disease this distribution means dissemination of that disease which, under proper administrative control and with adequate and reliable scientific knowledge, could have been prevented.

You will have gathered from all this that I am greatly concerned with the early non-clinical case and indeed this is so, for it is far more important to detect the condition in its very early stages than merely to be able to tell an owner that an animal which is wasted or which has suffered from a persistent diarrhœa for some weeks is a case of Johne's disease, because by that time the damage has been done. Early diagnosis of any disease is a pre-eminently important factor in control, and any attempt at eradication is likely to be a trying and tediously long business, to say nothing of the expense incurred during the process.

I have already referred to the observations of some stock-owners, but there are cases which cannot be correctly described as "bad doers" in that they are in very good condition but nevertheless certain portions of their anatomy rarely or never put on flesh. Some of you are doubtless acquainted with the beast which is

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described as "weak behind" and in such animals there is a lack of muscular development in the gluteal region and of the muscles around the femur. I produce for your inspection a photograph of a bull which is the property of the Medical Research Council and whose history will be of interest, I think. He is a pedigree Jersey and was born on March 10th, 1931, of a mother which was in the last stages of Johne's disease; indeed, she had to be destroyed about 14 days after parturition had taken place. The calf, whose photograph is before you and is there shown as a mature animal, was caught in a sack at the time of birth, did not come in contact with any unwashed part of the mother's exterior, was at once removed and did not see his mother again. He was hand reared, the milk used being from our own tubercle- and Johne-free herd and, as you will see, is a very fine specimen. Nevertheless, he has that obvious anatomical defect to which I have referred and he has also on occasions reacted to the johnin test. The first positive result was seen when he was about six months of age. Subsequently he did not react but more recently he has responded again. Ever since birth (three-and-a-half years) he has been rigidly isolated from all other cattle and has been kept in a place which has previously housed only healthy beasts. He is used for stud purposes on occasions and of course carefully watched. So far, acid-fast organisms have not been isolated from his fæces although it has to be recorded with regret that a spell of diarrhœa lasting some three or four days, during which time it might have been possible to secure positive results, occurred during my absence from home.

My object in producing this photograph and describing the animal portrayed is that I believe him to be the subject of Johne's disease for reasons already stated and it is our intention to conduct a *post-mortem* examination at some time in the future.

[Since writing this paper the bull has had another short attack of diarrhœa lasting, as formerly, for about two days. Samples of fæces collected during this period were examined and acid-fast organisms, indistinguishable from the bacilli of Johne's disease, were seen. Their exact identity must of course remain a matter of doubt until cultural and other experiments, at present under way, have materialised. The point is, however, interesting and so far as it goes lends support to the contention made with regard to the case earlier on.]

In the matter of early diagnosis, Mr. S. J. Motton, of Penzance, who has had considerable experience in the matter and whose permission I have to make use of notes which he has very kindly sent me, holds very definite views. He believes that the most useful early indication of the existence of Johne's disease is the occurrence of a swelling, œdematous in character, which makes its appearance between the rami of the lower jaw. Initially it shows itself at the point where the rami meet and should be looked for in the morning after the animal has been feeding at grass overnight. At first it will disappear during the period of stall feeding and only reappears when the animal is turned out to graze, when its return will frequently be seen in twelve hours. At the outset its occurrence may be intermittent, but Mr. Motton informs me that he has on many occasions observed this sign as a first symptom for as long as two years before any other evidence of the disease has made its appearance. More frequently, however, it is seen a few weeks or months before these other symptoms occur. I do not think that Mr. Motton suggests that every early case of Johne's disease shows this symptom and even in those where the swelling has been seen there have been long periods when it was absent.

A further point of considerable interest and of much practical importance which is also reported by Mr. Motton is that the elimination of cattle showing this symptom as well as fading of the coat, has resulted in the reduction in mortality from the disease to almost negligible proportions.

The disease has been described in cattle, sheep, and goats, deer and buffalo and of these it would seem that cattle show the highest degree of susceptibility. Whether this is due to circumstances surrounding living conditions and that the relative crowding of cattle which obtains in this country provides increased opportunity for infection and re-infection and not necessarily to the fact that cattle as a whole are really less resistant than the other species mentioned, is a moot point. Outbreaks in sheep have from time to time been recorded and in this species the disease appears to run a more rapid course than in cattle. Even in sheep the disease presents on occasions some of the curious and inexplicable characters which are seen in cattle. For example, in certain herds which I have in mind there may be two, three or even more deaths in one year and this state of affairs must indicate advanced disease and consequent badly infected pastures. Yet for some reason which we cannot explain the herd may be free from such visitations for some years after, although no *satisfactory* scheme has been adopted to prevent its spread. The same curious state of affairs has been observed in sheep.

I am, as you will have observed, dealing with this subject in a somewhat irregular manner and have departed from the orthodox methods

of description. This line of attack has been adopted with a reason.

Perhaps a word on the clinical symptoms and *post-mortem* appearances of the disease as seen in sheep, or more accurately as I have seen it in this animal, will not be out of place. Doubtless you will recall Stockman's description, which was gleaned from information obtained from cases seen in Scotland. In that case diarrhœa with considerable emaciation was noted and the disease ran a fatal course in a period of weeks or months. Further, there were observed numerous small hæmorrhages under the mucous membrane lining the intestine and although some amount of thickening was seen there was a complete absence of corrugation. An outbreak of a similar nature came to my notice in January of this year, a full report of which is in process of preparation and will be published in the near future. The symptoms observed were almost identical with those described by Stockman except that one failed to observe any marked thickening of the mucous membrane. There were, however, an accumulation of mucus and a few linear markings resembling hæmorrhages, all of which have been seen previously.

A point of some scientific importance, although of minor clinical interest, is that it is not easy to obtain primary cultures of the organism from sheep. It is possible, however, although the incubation period is much longer than that which has been observed in the case of cattle. Sub-cultures, on the other hand, grow with greater facility.

Distribution of the Causal Organism

The bacillus of Johne's disease is found with regularity in the lesions but, in addition, it has also been observed by Alexejiff-Goloff in a fœtus *in utero*, in a newly-born calf, and also in the milk of three cows. This important observation may explain the existence of the disease in young calves of three to six months of age, for otherwise the difficulty of providing an acceptable explanation for such occurrences, when one recalls the alleged lengthy incubation period, becomes apparent.

It is for this reason that I have concentrated on this aspect of the subject for the past ten years. Additional reasons are that there is no known cure for the disease and that it is a progressively fatal one. The situation of the lesions, coupled with the existing state of our knowledge, or if you prefer it our ignorance, suggests that any attempt at cure directed towards a clinical case must be considered hopeless and even dangerous—dangerous because there are few farmsteads where such a procedure can be carried out with proper safeguards to other cattle; the staff is inadequate and peculiarly unsuited mentally for the purpose.

As some of you who have read my writings on this subject will have learned, I consider treatment as being indefensible and unwarranted.

The position then, so far as we have gone, is that we have an incurable, contagious disease. What are we to do about it, or rather, what can we do? To answer this question we are at once brought back to the question of early diagnosis; indeed, we cannot get away from it, and this, in the absence of invariable and reliable symptoms, suggests some kind of allergic test.

Many years ago one of the methods suggested was to test with ordinary tuberculin and any "bad doers" which were negative to the test and were free from parasitic invasion were looked upon at least with suspicion or as being probably cases of Johne's disease. This is assuming that the herd was situated in a Johne district and that there was a history of previous cases.

There are obvious objections to this method, one of the most apparent being the probability that some of the tuberculin reactors were suffering from both diseases, and apart from that important factor it can hardly be held that the mathematical theories of Euclid can be applied to the scientific detection of disease.

Next in the list of attempts to diagnose Johne's disease comes the use of avian tuberculin. This was introduced because it was at one time thought that there was a clear relationship between avian tuberculosis and Johne's disease; indeed, it was at one time stated that the two conditions were the same.

Its supporters claimed that the percentage of reactors obtained as a routine procedure was such as warranted its use and there are many who hold the same or similar views to-day. In view of the somewhat close relationship which exists between the various members of the acid-fast group of organisms, it would not be surprising if one did get positive results by the use of this product, and it would be similarly difficult of comprehension if one did not obtain failures. I am a firm believer in specificity in all things and the testing of cattle for Johne's disease is no exception. I hold that if it is possible to obtain a certain proportion of satisfactory results by the use of avian tuberculin one is entitled to expect a much higher proportion if the product used is a specific one.

A properly prepared johnin has this advantage—this product can to-day be prepared from the causal organisms of the disease and for this reason, and also because it is possible to prepare a *potent* product of this nature, I advocate its use to the exclusion of all other methods.

I prepared the first batch of johnin for double intradermal use in 1926, and after two years use in the laboratory and in the field the results obtained appeared to warrant the view that johnin prepared in this way and used in the manner recommended, was of much value. Even so, the product was far from ideal; in fact, there was at least one drawback. In spite of this difficulty, experience indicated that as a diagnostic agent it was at least as valuable as others and was probably more reliable. The chief drawback encountered was the occurrence in normal animals of a swelling closely resembling, both in character and appearance, those seen and expected in reacting beasts. These non-specific swellings have been a source of some anxiety to practitioners, more especially those who have had little experience with this product, and it was clear that considerable experience was necessary before one could expect to become proficient. Even so, occasions did arise when individual animals appeared to show evidence of this non-specific response to a much greater extent than others and in these animals it was impossible, of course, to arrive at a correct conclusion.

Looking through the results which have been sent me from time to time from about 70 veterinary surgeons, it is clear that the majority have succeeded in overcoming this difficulty other than in the exceptional case. The explanation of this bewildering state of affairs is not difficult to understand when one considers the very complex nature of the medium which is used for the production of the johnin. It is with the object of removing this difficulty and serious drawback that one's efforts for the past six years have been concentrated in an endeavour to prepare a diagnostic agent of high potency and at the same time one which produced little or no non-specific swelling in normal animals. Obviously this meant the use of a synthetic medium possessing no foreign proteins or other substances which might set up doubtful results.

It is now possible to prepare such a product and nowadays the organisms are cultivated with relative ease, not only on the surface of certain synthetic media but without the aid of *B. phlei* or any other acid-fast organism. (You will recall that Twort and Ingram, in their Monograph, stated that the essential substance for the artificial cultivation of the bacillus of Johne's disease was to be found in such organisms, and it is only quite recently that it has been found possible to dispense with their use.) The importance of the elimination of any acid-fast organism from the culture medium except that which it is intended to grow, will be apparent to anyone when one adds that it is quite possible to secure reactions by the use of products prepared from most acid-fast organisms including *B. phlei* and even the harmless butter bacillus of Rabinowitch.

Results so far obtained from the use of a johnin so prepared and adequately tested for potency before use have satisfied me that it possesses the two main characters requisite, namely, potency and complete lack of ability to produce non-specific reactions.

I will end by saying a word regarding potency. It is my unalterable opinion that a johnin, however prepared, should not be issued for general use unless a potency test which it has passed has been carried out. In my experience one is not able to say whether or not any particular brew is good, bad or indifferent until this has been done and I have in the past been obliged, either to increase concentration with a view to bringing potency to a point which could be regarded as satisfactory, or alternatively to throw the whole batch away. Although the point does not arise in this discussion, my remarks in this connection apply with equal force to the preparation of tuberculin.

It is possible with advantage to enlarge on this question of potency, because it is one of paramount importance to the veterinary practitioner. One cannot deny that in the past the profession has been extraordinarily patient and has continued to use biological products the potency of which in many cases is by no means assured. As a body we have of course made representations from time to time urging that this question receive the attention which its importance warrants, and there is reason to believe that at long last our efforts are to be rewarded.

In any case and until there is some kind of guarantee that biological products, which the practitioner is called upon to use, are of reasonable potency it is obvious that the results obtained will be variable and that one is precluded from offering criticism either in favour of or against any ***particular method*** or ***procedure*** since the most important factor upon which any such criticism could be based is unknown.

I should have liked to go into the question of various methods of concentration and to talk with you concerning their relative advantages and drawbacks. These are vitally important matters and are, or should be, of more than passing interest to those who find themselves in the position of having to use these products. In other words, I should like to see greater interest in this phase of scientific activity on the part of the general practitioner, but such interest is only possible as a result of greater knowledge which, in its turn, has to be passed on by the research worker.

Discussion

The discussion was opened by Major J. G. McGregor (Stirling) in the following terms:—

As an advance copy of Major Dunkin's paper was not available, I have been precluded from dealing with the various points which he has raised and my remarks will be confined to a consideration of the economic significance of the disease.

My experience with johnin has been very slight, therefore I have left that aspect of the paper to be dealt with by those who have more experience of it.

By "economic significance" I understand the gravity of the loss which is sustained by stock-owners and the public generally through the presence of the disease in the herds and flocks of our country. How can this loss be estimated? In the present state of our knowledge it can only be estimated relatively to the other scourges which are endemic in our herds and in the absence of reliable statistics opinions are likely to differ. If I were asked to place Johne's disease in a list of cattle diseases given in the order of their importance, I should enter it after contagious abortion and/or sterility, mastitis, and tuberculosis in bovines. North of the Border, Johne's disease is one of the lesser scourges. It is rare to see a number of cases at one time on a farm. Forty-five cases in three years is the highest figure I have heard of in Scotland, but that has only happened once in my knowledge. Recently, Mr. Burgess, late of Buchlyvie, drew my attention to a small dairy farm in which there were three young animals affected at the same time. These are exceptional cases. One or two each year is the average on badly affected farms in my area. The disease is almost always met with on farms that are definitely "wet" and contain stagnant pools of water. Attention to this by drainage or fencing off watering places where animals walk in to drink, and the installation of troughs raised above the level of the surrounding ground, with a clean water supply, has been in my experience the soundest advice than can be given to any farmer whose stock is affected.

Our knowledge of the incidence of Johne's disease is on a par with that of all the other diseases of animals which are not subject to strict administrative control. As a profession, we are about to start a campaign against tuberculosis and we have only a hazy idea of the magnitude of the problem which confronts us—our knowledge of the incidence of Johne's disease is even less, but it is worth noting that the Committee which was recently set up in Scotland to combat contagious bovine abortion is beginning its work by endeavouring to find out as accurately as is possible with the means at its disposal, the extent to which contagious abortion exists in our herds to-day.

What is the position regarding Johne's disease? From a survey in 1930 of 450 herds containing 22,000 cows, carried out by the Scottish Milk Record Association to ascertain the causes of disposal of dairy cows, it was learned that advanced tuberculosis and Johne's disease accounted for 5·4 per cent. of the disposals and that the part which Johne's disease played in this was negligible. Similar investigations were carried out in the neighbourhood of Cambridge in 1928-29 and 1929-30, when the figures for the same two diseases were 10·4 per cent. and 9·6 per cent. respectively. In the neighbourhood of Reading Agricultural College the comparable figure in 1929 was 12·3 per cent. and in a group of six counties in the South of England 15·3 per cent.

In a paper read to the World's Dairy Congress in Rome this year, by Dr. Sanders of the School of Agriculture, Cambridge, it was stated that 5·04 per cent. of the total wastage in cows was caused by advanced tuberculosis, 2·12 per cent. by Johne's disease and that 2·81 per cent. were wasters. Combining the three, it will probably be near the mark if we conclude that 7 per cent. were tuberculous and 3 per cent. cases of Johne's disease.

While I have quoted these figures and believe that they reveal the answers which the various investigators received to their enquiries, they must not be interpreted as revealing the incidence of the various diseases in dairy herds—they only record the causes of death or disposal. The incidence of Johne's disease must be higher than the figures quoted, but until the means for detecting the disease are perfected and applied its incidence must remain conjectural.

In discussing the economic significance of Johne's disease it might be profitable to ask whether the disease is becoming more common, and that in turn necessitates an investigation into the state of affairs which existed in the past. While it must be remembered that it was only in 1895 in Dresden that Johne and Frothingham first described the causal agent of the disease, an examination of the early literature of the profession shows that persistent diarrhœa of cattle leading to emaciation and death is mentioned by all the early writers on cattle diseases that I have been able to consult. I do not claim to have made an exhaustive study of the literature, but for some years I have been very interested in veterinary books of the eighteenth and early nineteenth centuries and have been impressed by the prominence given in such books as Clater's "Cattle Doctor" and White's "Veterinary Medicine" and others to the condition in cattle called variously "scouring rot," "scantering," and "shooting," the symptoms of which are similar to those of Johne's disease. Lawrence (1798) says: "Scouring in cows is

common enough and I have seen it continue so long for want of care that the beast has been irrecoverable." White (1815) says: "Scantering is a very serious disease and destroys a great number of cattle." In the second volume of the *Veterinarian,* 1829, there appears an article entitled "Diarrhœa in a Cow" by W. A. Cartwright of Whitchurch, of whom Sir Frederick Smith says in his "Early History of Veterinary Literature": "In addition to its editorial staff the *Veterinarian* had several regular contributors in the profession; of these, Cartwright was easily the most important." I mention Cartwright as he was a most remarkable practitioner. He was the first veterinarian to report a case of tuberculosis (*Veterinarian,* 1839) and he must for ever be remembered as the person who introduced the treatment of torsion of the uterus by rolling. In his communication to the *Veterinarian* Cartwright describes for the first time the corrugation of the small intestines, which were thickly covered with mucus. I have no doubt, from the symptoms and *post-mortem* appearances he described, that the case in question was Johne's disease. [Major McGregor here interpolated the observation that, although he had not written it down, he had a distinct recollection that Cartwright mentioned the œdema between the rami of the lower jaw.] He adds: "The disease is very prevalent in this country and few are ever saved or indeed attempted to be cured." From these references and others which I might quote it is evident that Johne's disease was very widespread in England 100 years ago, and it is also of interest to observe that in all the literature of this period which I have been privileged to read I have failed to find any case described which resembles tuberculosis in cattle as we find it to-day. I do not suggest that it was not in existence then, but it could not have been common.

At the Llandudno Congress last year I was interested to hear Mr. T. Wilson, who practises now in the same area as Cartwright did 100 years ago, relate that Johne's disease was still prevalent. The method of watering cattle in dew ponds in pastures which obtained in Cartwright's day still persists in that part of England. This factor is quite sufficient to account for the continued existence of the disease.

My reading of history inclines me to believe that Johne's disease was as prevalent 100 years ago as it is to-day and that with our increased knowledge it is now time that the veterinary profession took steps to eradicate it from our midst.

We welcome Major Dunkin to-day in his crusade against Johne's disease and wish him every success in his endeavour to produce a reliable diagnostic agent.

Mr. A. Gofton expressed his regret that he had not been present during the reading of the early part of the paper, but stated that he had greatly appreciated what he had heard. He had no criticism to offer, but there were one or two facts which he wished to record. Looking at the map on which Major Dunkin had plotted out areas in which Johne's disease occurred, there did not seem to be many areas near the Firth of Forth and he wished to submit some figures which had been compiled from observations made by Mr. Sewell in Gorgie abattoir over a period of twenty weeks in 1930. All bovine intestines which were seized in the abattoir during this period, from any cause whatever, were examined for evidence of Johne's disease. Five hundred and eight sets of bovine bowels, comprising those of 297 cows and 211 bullocks and other bovines, were examined. In 51 cows (or 17·1 per cent. of the total bowels examined) corrugations and thickening were present. Microscopical examination of scrapings from mucous membrane revealed acid-fast organisms resembling the Johne's bacillus in 21 (or 7 per cent. of the total examined). Only one cow showed clinical symptoms of Johne's disease, the remainder having been consigned to the abattoir from the fat stock market in the ordinary course. Of 211 bowels from other bovines, two (or 0·94 per cent.) showed corrugations and one of these (equivalent to 0·47 per cent.) showed the organisms on microscopical examination of a scraping. It was possible that if sections had been made of bowels showing corrugations but which were negative on microscopical examination of scrapings, the number of proved positives would have been higher, but circumstances did not permit of this being done. It seemed to be significant that clinical symptoms were manifested in only one out of 51 cows in which lesions of Johne's disease were demonstrated *post-mortem.*

With reference to the disease in sheep, he would be interested to learn if Major Dunkin could give any indication as to the prevalence of Johne's disease in that animal. He thought it probable that sheep were more commonly affected than was generally supposed. Was it possible for sheep to act as a reservoir for infection and constitute a means by which cattle became infected? His first contact with a clinical case in sheep occurred in a flock of pedigree black-faced sheep. The owner, having lost a number of valuable ewes, had been tempted to think that some constitutional factor, adverse to the ewes, was operating on the ewes of certain strains. A ewe was slaughtered for his examination and Johne's disease was found on *post-mortem.* The appearance of the bowel was similar to that described by Major Dunkin, and scrapings made from the mucous membrane were extraordinarily rich in bacteria. He was also aware that his friend Dr. Greig had come across several outbreaks in sheep. He would, therefore, be interested to know if Major Dunkin could give any indication as to the frequency of Johne's disease in sheep and its geographical distribution in relation to the disease in cattle.

Mr. W. Wallace Peggie stated that he had noted that Major Dunkin had said the disease was of an incurable nature and that treatment was indefensible. Notwithstanding this, he wondered if the feeding to stock of properly balanced mineral rations might have any effect in somewhat lessening the number of cases. He had not encountered a large number of clinical cases in cattle, but had dealt with cases in sheep and ventured to think the disease in this animal was much more common than might be supposed. Recently he had forwarded a carcase of a sheep

to the Animal Diseases Research Association and a positive diagnosis of Johne's disease was given, but curiously enough, so far no other cases of the disease had occurred on that farm. Spicer, he believed, had advocated feeding minerals and put forward the theory that this checked the advance and spread of the disease. He would like to ask if it had been found possible experimentally to immunise cattle against Johne's disease. He understood Gaiger and Davies had done some work on these lines, which was similar to the Calmette and Guèrin method of immunising calves against tuberculosis. Could Major Dunkin indicate if this was of any value? In this disease they were dealing with an acid-fast bacillus, in many respects very closely resembling the bacillus of tuberculosis, and he had often wondered if the presence of the bacillus of Johne's disease in an animal might have any effect upon the reaction produced with the double-intradermal tuberculin test which might be carried out on that animal. Could the reaction be influenced in any way and a false result be obtained?

Mr. D. R. Wilson observed that, as a laboratory worker, he seldom met with the disease except in the course of diagnosis work. In one year he had met with five outbreaks of the disease in sheep, and he felt that where pining symptoms were observed in these animals, it would be well to keep Johne's disease in mind.

The disease was encountered in October, 1933, in a flock of 420 black-faced ewes on a farm in the Pentland hills, at an altitude of about 1,000 feet. The history obtained was that the outbreak commenced in the previous spring, and that odd deaths occurred throughout the summer. Altogether 12 ewes died, their ages varying from two to five years. Two animals (one which was slaughtered, and the other which had died) were both found to be cases of Johne's disease. A few months later, the disease was again encountered in two ewes (three and four years old) from the neighbouring farm, which had only newly become tenanted by the same owner.

In the next distinct outbreak, diagnosed by Mr. Ferguson, veterinary surgeon, Crieff, a piece of bowel was examined at Moredun Institute, and a confirmatory diagnosis given. In a communication, Mr. Ferguson related how at that time on the same farm he found lesions of Johne's disease in an Irish cow which had reacted to the tuberculin test and was slaughtered under the Tuberculosis Order. On the farm, during the present tenancy, which had existed for five years, eight cattle and about 37 sheep had died, all showing similar symptoms. The ewes were brought down from the hill and put on the cattle pastures during the lambing period. Cattle were also taken up to graze on pastures near the shepherd's house, and ewes were lambed on these pastures also. All ewes were returned to the hill after lambing, and deaths occurred chiefly in June and July. All cases did not show symptoms of diarrhœa, but it was stated that these cases showed exactly the same lesions in the intestines as the cases which showed diarrhœa.

A third outbreak occurred on a farm in the Pentland hills near West Linton. One ewe was found to be affected, although a second pining ewe examined a few weeks later was negative.

The fourth outbreak was encountered by his colleague Mr. Brownlee, he having diagnosed the disease in a three-year-old half-bred ewe which was brought from one of the eastern counties and was suspected to be suffering from scrapie.

A fifth outbreak occurred in a Cheviot flock on a Peebleshire farm. The owner did not know definitely when the outbreak originated, but he had had about 20 deaths in his ewes during the last year. All had been affected with what he called "a peculiar pining disease." The majority had been of one age, being born in the spring of 1932. The animal which was examined was of a younger age, born in the spring of 1933. He associated the infection with one particular field and, although cattle had had access to this pasture, only one cow had been destroyed on account of a pining condition not considered to be tuberculosis. Lately, other two sheep on this farm had been destroyed on account of Johne's disease.

In the first outbreak deaths occurred before lambing, or while lambs were being nursed; the course of the disease was about three months, although the owner stated that in some cases death took place about two months after symptoms were first observed. Scouring might not be in evidence until about a fortnight before death: it was generally severe about this time. In the case of the fifth outbreak, the owner remarked that "affected animals eat, scour, pine and live too long."

Affected animals were bright and their appetites were normal. The symptoms were such that the condition could easily be mistaken for parasitic gastro-enteritis, although the ages of the animals would be some guide in this respect. The animals were anæmic; there was usually some excess of water-clear peritoneal fluid. The affected portion of small intestine was thickened, but the mucous membrane was not thrown into distinct corrugations as in cattle. In all the slaughtered cases, with the exception of one, the affected mucous membrane of the small intestine was bright yellow in colour.

A blood analysis of one case was carried out by his colleague Dr. Dryerre, and the hæmogoblin was found to be present in only about 50 per cent. of the normal concentration.

In a paper presented to the National Veterinary Medical Association Congress in 1933, it was suggested that the disease in sheep might be more widespread than was thought, and his experience in the past year supported this.

Major Spreull said that he had had very little experience of the disease in his practice. The high water troughs and running water and the fact that most of the land was arable instead of moorland or pasture might probably account for this. In 1929 he bought a good cross cow, "at the drop," for his own farm. In the following spring she commenced to scour and went to pieces and he found Johne's disease. A second cow which came from the same farm a year later and one of his own stock also became affected, but neither before nor since had any case occurred on either farm. These were very isolated cases and he would like to know if Major Dunkin could give him any idea how long it would take for an animal to become an actual clinical case, such as those three, and when they could be sure of getting *Bacillus johne* in the rectal scrapings.

Mr. W. Nairn observed that in his area the disease was rare—owing, probably, to the high standard of animal husbandry. He had had one grave outbreak, and partly on his recommendation and partly on the suggestion of the owner himself, there was a change in the management of the stock and the disease disappeared. The younger cows, as was usually the case in this disease, were, in some years, almost wiped out and unfortunately at that time they had no johnin to assist in an early diagnosis; to-day he would use johnin in controlling an outbreak. He wished

Major Dunkin every success in his efforts to produce a reliable diagnostic. He was afraid the practitioners here did not realise the tremendous loss caused in the South by this disease, which on some farms practically stopped cow rearing altogether.

Dr. H. Dryerre said that as Major Dunkin seemed to be collecting data and information, some experiences of his in the course of work at the Animal Diseases Research Association might be useful. During the routine examination of specimens from all over the country he had examined blood from several cases of Johne's disease in sheep and cattle without, at the time, knowing that this disease existed in the animals.

In all cases the blood showed a deficiency of hæmogoblin; in fact, there was no case of Johne's disease that did not show this deficiency and this suggested that iron deficiency, by creating a hæmoglobinæmia, might so reduce the resistance of the animal to infection that it had some bearing on the incidence of the disease. In that connection he had examined blood from a herd of cows in the far North of Scotland in which 15 head of cattle had died in one spring. The practitioner was baffled and blood from the affected and non-affected animals was sent to the Animal Diseases Research Association. All showed a hæmogoblin deficiency. In the affected animals the blood was 30 to 60 per cent. hæmogoblin deficient and in the non-affected 10 to 20 per cent. After examination he reported what he had found and suggested a course of iron oxide, 1 ounce per day. After he had posted his report he received a letter from the practitioner, which had crossed his. The practitioner reported that he had found Johne's disease in one of the animals. He replied that the original advice stood, as the iron oxide, if it did no good, could do no harm. A subsequent report from the practitioner showed that the animals had steadily improved in condition and three months after the course of iron oxide was commenced the practitioner remarked that he had never seen the animals in so good condition. Dr. Dryerre said that he must agree that the case of Johne's disease found by the practitioner might have been the only one at the farm; nevertheless, he thought it was worth mentioning the case. Many years ago Stockman had recommended sulphate of iron, but he did not know if any benefit resulted from that. He did not see, on the map exhibited by Major Dunkin, any record of Johne's disease north of Inverness, but according to the reports of the practitioner he had mentioned, it seemed to exist there.

The President (Mr. Esmond Brown) said he had listened with great pleasure to the paper, which he thought was an exceptionally good one. He would like to congratulate Major Dunkin on the "irregular" manner in which he had presented the paper and on the most lucid and interesting way in which he had read it. He had listened to the paper with great pleasure and some degree of pride, as he had a little to do with Major Dunkin in his early veterinary education. He was interested in references that had been made to the existence of the disease in sheep, particularly in the mention of cases recorded by Stockman. In 1909 he made a *post-mortem* examination of the first of these sheep. He found slightly thickened intestines and small hæmorrhages and nodules in the bowel. He was unable to decide the cause of the lesions and Stockman suggested the use of Ziehl-Neelsen's stain. Scrapings were found to be swarming with acid-fast organisms which were also plentiful in sections. After this he left the laboratory, and when he returned a year later he found similar acid-fast organisms in a sheep, although no such case had been found in his absence. He thought his colleagues were inclined to blame him for placing the organisms there himself. (Laughter.) He had used avian tuberculin on several farms and while the test was not very specific, he thought he could at least say that after it had been carried out they had a little more information than before. He found that the thermal reaction was later than in the tuberculin test.

He would now call on Major Dunkin to reply to the discussion.

The Reply

Major Dunkin said that before he came North he was warned by a Scot in London that his visit to Scotland would be a profitable one, but that he must be careful as he knew the members of the Division to be a hard-headed, inquisitive lot. (Laughter.) That gentleman had made a forecast of a lively discussion and he (Major Dunkin) was grateful that this had been so.

Major McGregor had put a list of the four cattle diseases which caused greatest loss in the order of their importance, in his opinion. This, of course, was a matter of opinion and he was not surprised that Major McGregor placed Johne's disease fourth, as this would seem to be quite the general opinion in Scotland from the trend of the discussion; nevertheless, it was a fact that in many parts of England the disease would be placed first. In some cases he granted that a great deal of help was obtained by controlling the water supply: he had encountered two large outbreaks where the water supply unquestionably was at fault. He was acquainted with the statistics which Major McGregor had quoted, but as Major McGregor himself had said, only the advanced cases were mentioned in these figures and therefore this was not an indication of the incidence of the disease. These figures, then, were not very valuable. If it were possible to find out the incidence of the disease, it would be of value to do so. He was interested that Major McGregor had mentioned that Cartwright had found the œdema between the rami of the lowar jaw. Major McGregor had inferred from the quotation of references that Johne's disease was as common 100 years ago as it is now. He would not be surprised if this was the case, and in any event no one could contradict the assertion. As he had already indicated, in some parts of the country the disease was looked upon as the biggest scourge in cattle and in other districts there did not seem to be much trouble with the disease. He had noticed that in some places where the disease had been common it disappeared for some years and then a few cases would be encountered. Undoubtedly feeding and husbandry of a reasonably high standard were important in controlling the disease, but he had found it present where the feeding and husbandry were on a very high standard, even as high as in Mr. Nairn's district. The problem was undoubtedly a difficult one and a considerable amount of research was required to which the practitioner could contribute by giving all the information at his disposal.

Replying to Mr. Gofton, Major Dunkin said he also had encountered macroscopical lesions in bowels where it was impossible to demonstrate the organisms and he could not explain this. He had only a little information concerning the frequency of the disease in sheep. In *The Veterinary Record* last January an outbreak in sheep was recorded. He bought same of these sheep and he found no lesions indicative of Johne's disease;

there was no thickening of the bowel, but he demonstrated a large number of organisms. These organisms required about eight months to grow on culture medium and, taking everything into account, he was not yet prepared to admit that the condition was actually Johne's disease. He was carrying out experiments attempting to transmit the disease from sheep to young calves.

Mr. Peggie had mentioned the question of feeding minerals, but he was unable to give any information of its effect upon Johne's disease. He knew Spicer's views on the subject, but while he was not wishful to disparage what Spicer had done and written, he wanted to say that Spicer had brought no evidence to support his statement. There was no detail of the ration, and as he had said before, in some cases with no change of management or feeding the disease disappeared of itself.

He had done nothing by way of immunisation as his attention had been directed along other paths. The idea was not new; in 1912 a "Preliminary Notice" in connection with immunisation against Johne's disease was issued by Meissner and Kohlstock in which they mentioned using various doses of a preparation which was prepared by mixing material scraped from the mucous membrane of the affected gut with antiformin, and filtering. This was a preliminary notice and as far as he had been able to ascertain, nothing else had appeared since on the subject. Mr. Peggie had mentioned the possible effect of Johne's disease on the reaction produced in testing with tuberculin. In 1927 Mr. Trevor Spencer had trouble with Johne's disease in herds which had not been tested with tuberculin. He (Major Dunkin) had suggested that johnin and tuberculin should be used on the animals, one product on each side of the neck. He saw the animals at the 72nd hour and in that herd it was a simple matter to divide the animals into four categories; those which reacted to both agents, those reacting to johnin alone, those reacting to tuberculin alone and those which were negative to both tests. This was the first field test with johnin by a practitioner and there were certain favourable results. He had bought four of each category and had recorded the *post-mortem* records in *The Veterinary Record*, but he could not give details from memory. He had said that he did not believe in the use of avian tuberculin because of the lack of specificity. He would quote the case of a sheep in which he was able to produce an allergic reaction to johnin, tuberculin, avian tuberculin and to a product made from the butter bacillus. This showed the difficulty of securing allergic response in an animal suffering from a disease caused by acid-fast bacilli.

He was very interested in Mr. Wilson's records of outbreaks in sheep and he urged Mr. Wilson to record the cases in detail. Apparently the disease was more widespread in sheep than was realised; this might be the case in the South also, although at present they did not know it.

Major Spreull had asked how long the disease might be present in an animal before clinical signs were in evidence. He would quote the case of the bull whose photograph had been handed round. He thought the bull was now becoming a clinical case; at any rate, there was now evidence of organisms in the fæces. He would have occasion to make a *post-mortem* examination on another account and hoped he would be able to confirm the test. He thought that at *post-mortem* it was necessary to examine glands and tissues other than those usually recognised. In his opinion, in this case in the bull there was supporting evidence for the suggestion that the disease could be congenital. Mr. Nairn had indicated that the disease was not wide spread in his area and suggested that the good husbandry was probably the reason. He thought he had already answered this point.

He was very interested in Dr. Dryerre's findings of low hæmogoblin content in the blood. He had not heard of this before and he wondered what the significance might be. Stockman, in private conversation, had told him about using sulphate of iron and when he (Major Dunkin) asked if it was suggested that the organisms were killed, Stockman replied "Oh, no, but there is hæmogoblin deficiency in all advanced cases." Examination of the blood might help to improve on *pre-mortem* diagnosis. The complement fixation test could also be used, but it depended a great deal on how the antigen was prepared and, so far as he (Major Dunkin) had gone, it could not yet be described as specific.

Major Dunkin concluded by thanking the President for his kind remarks.

[Major Dunkin observes in a letter dated November 15th, addressed to the Hon. Secretary of the Scottish Metropolitan Division: "If I may once again refer to the bull whose photograph I circulated during the meeting, your members may be interested to know that since my return he has been killed and was found to be affected, to a more or less advanced degree, with Johne's disease."]

Clinical Communications

TUBERCULOSIS IN BOVINE MUSCLE

R. R. PIERSE, M.R.C.V.S.
Listowel

Subject.—A five-year-old Kerry milch cow presented for examination on July 13th.

History.—The owner stated that about three weeks before, he noticed a lump forming just behind the dewlap, and that the cow would not lie on her sternum.

Examination.—The animal was in fair condition; her coat was good, she was feeding well, and giving an excellent milk yield. The swelling mentioned seemed to be situated in the muscles overlying the antero-inferior aspect of the sternum, and was about half the size of a rugby football. The skin was unbroken and the lesion was painful. On exploration no pus could be found. The animal was normal in all other respects, and there appeared no evidence of disease in the lungs.

Diagnosis.—The lesion was diagnosed as a chronic inflammatory swelling, due to trauma.

Treatment.—A mixed blister was applied and the owner told to report three weeks later.

Course.—Nothing more was heard of the case until November 22nd, when the animal was again examined. The swelling had become reduced to about half its original size, but the animal was now very low in condition, and crepitations could be heard on auscultation along the lower borders of both lungs.

Post-mortem Examination.—The animal was

destroyed and *post-mortem* revealed the swelling in the muscles to be due to the presence of a number of caseous lesions. A number of small caseous areas were also present along the lower portions of both lungs. The laboratory report showed the lesions to be those of tuberculosis.

Remarks.—Evidently the muscles became infected through the skin, and possibly the lung lesions were secondary to the muscular. This latter observation is based on the situation of the lung lesions. Primary pulmonary tuberculosis seems to commence in bovines, as a rule, at the postero-superior portion of the main lobe (*i.e.*, that portion between the diaphragm, ribs and vertebral column); at least, this is the conclusion arrived at from examination of some 400 tuberculous animals.

Prior to this definite case, a small caseous area was observed in the muscle at this site by the writer, but was overlooked as the occurrence of tuberculosis in muscle was considered to be very rare. The view of other practitioners as to the frequency of clinical tuberculous lesions in muscle would be greatly appreciated.

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CONGENITAL DILATATION OF THE ŒSOPHAGUS IN A DACHSHUND

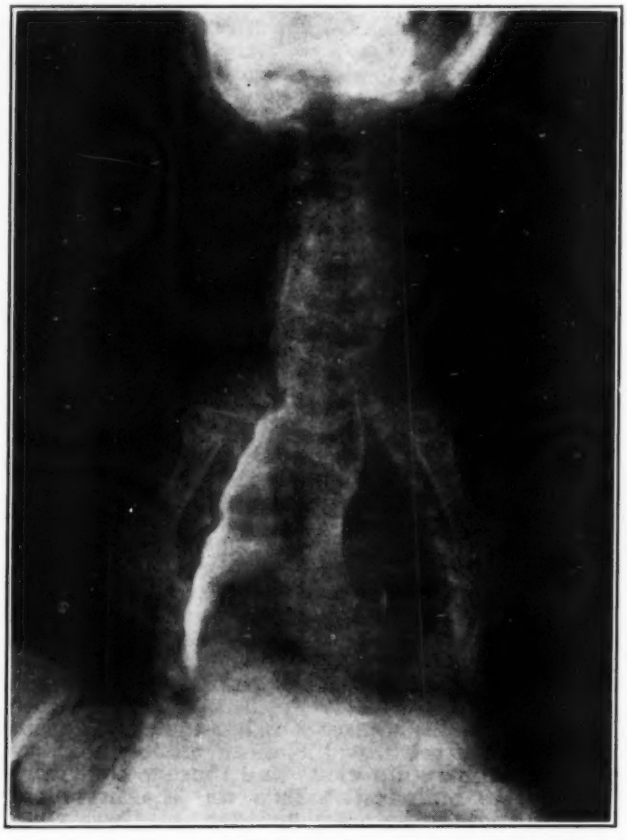
V. BERWYN JONES, M.R.C.V.S.
Guildford

Subject.—Dachshund dog, aged three months.

History.—Unthrifty from birth and with the habit of invariably vomiting a little of its food, solid and liquid, within an hour of feeding.

A probang was passed without meeting any obstruction and a radiograph was then taken immediately after a barium meal.

The accompanying negative shows the enormously dilated œsophagus, which was confirmed at *post-mortem* examination. No evidence of trauma or inflammation could be found.



WOMEN'S INFLUENCE ON VETERINARY SCIENCE

The President of the Twelfth International Veterinary Congress, Dr. J. R. Mohler, paid a graceful and appropriate compliment to the ladies attending, by addressing them on the above subject at a luncheon given in their honour at the Waldorf-Astoria, New York, on August 13th.

The appearance of the woman veterinarian has, with one outstanding British exception, been too recent to afford her the opportunity to establish the record of distinguished service which may be expected in the future; nevertheless, said Dr. Mohler, a number of women have made important contributions to veterinary science. In the field of veterinary parasitology, Dr. Georgina Sweet and Vera Irwin-Smith are known to all Australian veterinarians for their work. In England, Dr. Marie Lebour has studied extensively the parasites of fish and Miss Ormerod did extensive work on ox warbles, while veterinary parasitology has gained much from the studies of the Countess von Linden and Maria Plehn (Germany), Marcel Boppe (France), and the work done on equine strongylidosis by Gertrud Theiler, in South Africa. Nina Kohl-Yakimov contributed to our knowledge of filarids and protozoa in Russia, C. R. Bakker worked on ascaris in Holland and Annie Porter is a distinguished Canadian protozoölogist.

In the United States, Dr. Eloise Cram is a well-known scientific figure, being at present in charge of the work on poultry parasites in the U.S. Bureau of Animal Industry, among her associates being Dr. Myrna Jones, Dr. Ena Allen, Eugenia Cuvillier and Dr. Mary Skinker. Dr. Olive Swizy, of California, is pursuing valuable enquiries into protozoa, and Adele Hobmaier, also of California, has done excellent work on lungworm life histories, while Dr. Elizabeth Jones, of Harvard, has made important contributions to our knowledge of coccidiosis and epizoötic tremor of poultry.

In the field of bacteriology, Dr. Alice Evans, of the U.S.A. Public Health Service, is an authority on the brucelliases, while Ida Bengston, also of that service, has made outstanding contributions to our knowledge of botulism. Studying in the same and related fields, Hilda Hempel Heller, of California, has performed much valuable service in the study of anærobic organisms.

Having paid tribute to "these outstanding women," Dr. Mohler stressed the surprisingly broad influence exerted by those engaged in the more ordinary walks of life upon veterinary science and the betterment of the livestock industry. They have been conspicuous in their sponsorship of meat and milk inspection; for example, "judging from numerous incidents reported by the inspectors who have visited farms to make the tuberculin tests, the influence of women on behalf of safe milk supplies lends colourful human interest to this great veterinary project."

Abstracts

[The Gas Œdema Diseases of Cattle. Mihailescu, M. (Demonstrator, Faculty of Veterinary Medicine, Bucharest, Rumania.) Paper No. 33, Twelfth Internat. Vet. Congress, New York, 1934. *Author's Summary.*]

In a general way, the majority of bacteriologists admit that blackleg in cattle is a disease—we call it "traumatose emphysémateuse hémorragique"—the specific pathogenic agent of which is an anærobic microbe, *Clostridium chauvoei*. The presence of other anærobes in the emphysematous hæmorrhagic swellings of typical clinical cases of blackleg would be due, according to these authors, only to secondary invasion in a lesion provoked at first by *C. chauvoei*. Moreover, the very good results obtained by the vaccination of cattle with the toxin and the specific anatoxin of typical cultures of *C. chauvoei* would be the best confirmation of this opinion. As to the cases of blackleg in which it was impossible to isolate *C. chauvoei*, either the failure is considered to be due to the use of an inadequate method for isolating the anærobes or it is claimed that, in those cases, the disease, properly stated, was not blackleg.

It must be pointed out every time that the problem of blackleg is not yet definitely solved. Any way of working out the idea of absolute specificity is met by various objections, namely: It is difficult to differentiate the clinical and anatomico-pathological aspects of the gas œdema diseases in cattle from those produced by *C. chauvoei*; infection in blackleg does not always take place by the internal route, since cases of blackleg consequent to infection of the wounds by *C. chauvoei* have been noted; the vaccination which has been practised during a long period of years with powdered blackleg muscle and in which there have nearly always been spores of other anærobes besides the *C. chauvoei*, or in which this latter no longer existed, protected cattle well against that disease. Blackleg is a gas gangrene of cattle in which one cannot often find anærobes other than *C. chauvoei*. In researches which I have made in collaboration with my colleague Milcov on the frequency of *B. perfringens* in the tumours of blackleg, employing as a culture medium the deep gelatin of Veillon with the addition of normal horse serum in a proportion of 2 : 1, we have isolated from 42 pieces of dried muscle taken from dead oxen with symptoms and lesions of blackleg: *C. chauvoei* in seven cases, that is, in a proportion of 16·49 per cent. (four times alone, once associated with *Vibrion septique* and *B. perfringens*, and with *B. perfringens* alone three times); *B. œdematiens* in seven cases, that is, in a proportion of 16·49 per cent. (four times alone and three times associated with *B. perfringens*); *B. perfringens* in 33 cases, in 21 of which it was alone. Moreover, we have proved that *C. chauvoei* grew well in this medium and that the microbe can preserve its vitality in the dried muscles for more than one year.

There is a close analogy between *C. chauvoei* and *V. septique* as to the morphological and cultural characteristics and anatomico-pathological lesions produced in the guinea-pig. Although the cross-immunisation experiments carried out by many authors and by us, as well as the agglutinations, are not in favour of the identity of these two anærobes, one nevertheless must admit the great similarity between these two microbes. Neutralisation experiments made by us (Weinberg and Mihailescu), in which typical strains of *C. chauvoei* have been neutralised by an antivibrion septique serum in the same manner as the complement-fixation reaction, in which the *chauvoei* antigen behaves the same as the *V. septique* antigen, give us the right to understand that in the protoplasm of one of these two microbes, *V. septique*, there is a characteristic nucleus for the other, *C. chauvoei*, in the sense of "para," paratyphic, paratuberculous; *C. chauvoei* derived from *V. septique*.

Consequently, we must interest ourselves not only in the case of gas œdema of cattle caused by *C. chauvoei*, but we must also take into consideration the other gas œdema diseases of cattle, the pathogenic agents of which are *V. septique*, *B. œdematiens*, *B. perfringens*. These cases are not less numerous than the typical cases of blackleg. It is for this reason that it is necessary to provide polymicrobic and polyvalent antigangrene serums in order to be able to combat successfully the gas œdema diseases of cattle and, in order to prevent them, to use also a polymicrobic and polyvalent vaccination.

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[Classification of the Paratyphoid Diseases. Murray, C. (Professor and Head, Veterinary Research Institute, Iowa State College, Ames, Iowa, U.S.A.) Paper No. 37, Twelfth Internat. Vet. Congress, New York, 1934. *Author's Summary.*]

A classification of paratyphoid diseases in domestic animals is offered, based on Bergey's key to the species of the genus *Salmonella*, as published in his Manual of Determinative Bacteriology. This is a systematic classification of the *Salmonella* organisms based on their reactions in various carbohydrate media.

The paratyphoid diseases recognised as of most importance in America are discussed, with special emphasis on suipestifer infection of swine (necrotic enteritis or pig typhoid), which has

received considerable study in the Veterinary Research Laboratory of the Iowa State College, Ames, Iowa, during the last several years. A brief historical review of the work of the early investigators of this disease in America, in its relationship to hog cholera, is offered. The character of the disease in America apparently differs in certain aspects from that in Europe. In America it commonly affects older swine, three to six months of age or more, as compared with sucklings in Europe. In America it is of a more acute character, and commonly occurs independently of hog cholera, as demonstrated by exposure tests with filtered blood, proving absence of the virus of hog cholera. The carrier condition is not common, as shown by the records of bacteriological studies of normal swine by numerous authors. The results of immunological studies indicate that whatever immunity results from either natural infection or artificial exposure is ephemeral.

The contributions by American investigators to the knowledge of infectious abortion of mares, due to *S. abortivo-equinus*, are recorded; likewise those of Moore and others in the development of the knowledge of fowl typhoid. Recent work tending to show that resistance to fowl typhoid may be developed by selection of breeding stock from fowls recovered from the disease is reported by Lambert and Knox, of the Iowa State College. Fowl typhoid is shown to be a greater menace to turkeys than enterohepatitis in California.

Salmonellosis in cattle is a disease of some importance in North and South America. *S. enteritidis* has been incriminated in outbreaks of gastro-enteritis in both calves and adult cattle and in one outbreak in horses.

A new species of *Salmonella*, causing so-called "keel" disease in ducklings, has been described and named *S. anatum* by Rettger, of Yale. Edwards, of Kentucky, has reported the first isolation of this organism from baby chicks.

A disease of sheep, due to *S. ærtrycke*, is recognized in Colorado by Newsom and Cross. It caused a mortality of 6 per cent. in a band of 30,000 feeder lambs, following their delayed transportation over a long distance. *S. ærtrycke* has also caused an infectious colitis of foals, in Kentucky, with a mortality of 50 per cent. of affected animals. It is also held responsible for heavy losses in turkey poults in Connecticut.

The classical work of Rettger and his associates, in determining the etiology and means of transmission of pullorum disease (bacillary white diarrhœa), is reviewed, together with the later work of Jones, Bunyea, and others, in perfection of the technique of the tube and rapid, whole-blood method of the agglutination test for its diagnosis.

[**Immunological Phenomena in the Field of Parasitology.** Kotlán, A. (Royal Hungarian Veterinary College, Budapest, Hungary.) Paper No. 77, Twelfth Internat. Vet. Congress, New York, 1934. *Author's Summary.*]

Parasitic immunity involves principally three phenomena which may be termed "natural resistance," "age resistance," and "acquired resistance."

Natural resistance is an hereditary, constitutional peculiarity of a host due to which the host proves unsuitable for the establishment of certain parasite species. The host's resistance is based upon the lack of adaptation of a particular parasite to that host.

Age resistance, *i.e.*, a more or less definite resistance of the host to the infestation with parasites during its adult age, is a general phenomenon in the field of parasitology. There are also cases in which certain hosts, with the advance of the ageing process, become completely unsuitable for the establishment of certain parasite species. Age resistance is based, apparently, upon a non-specific defensive mechanism of the host.

The existence of an acquired resistance or imunity to protozoan and metazoan parasites is now definitely stated. However scarce the experimental proofs on the nature of this phenomenon may be, there seems to be no doubt that this resistance is based on a specific activity of the general defence mechanism of the host. The immunity is probably local in most cases.

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[**African Horse Sickness.** Nieschulz, O. (Tropical Diseases Section, Institute of Parasitic and Infectious Diseases, State University, Utrecht, Holland.) Paper No. 62, Twelfth Internat. Vet. Congress, New York, 1934. *Author's Summary.*]

As yet, the natural mode of transmission of horse sickness has not been discovered. The former epizoölogic observations, such as the absence of contact infection, the protection afforded by stables, restriction to the rainy season, relationship between amount of precipitation and severity of outbreak (which observations, however, are partly doubted to-day) pointed toward gnats as the plausible transmitting agents.

On the basis of personal field observations in Onderstepoort (Transvaal), gnat species of the genera *Aedes*, *Mucidus*, and *Anopheles* were thought to be the principal vectors.

Extensive experiments, in which infected gnats were put on horses at various intervals, and made suck 1,311 times, and in which more than 2,000 specimens were used for injection, proved that the virus will survive in the various culex species for a brief space of time only, and

that the gnats, therefore, cannot be considered as vectors.

Small laboratory animals, such as mice, rats, and guinea-pigs, could be infected with the virus of horse sickness through cerebral injection.

At the present time, one type has been carried through 100 generations of mice. The average duration of the disease was from five to six days; the mortality reached nearly 100 per cent. In the mice the virus exhibited neurotropism; it could not be demonstrated in the blood. Its accommodation to rats was more difficult, but resulted likewise in 100 per cent. mortality. The average duration of the disease was 14 or 15 days. The virus exhibited, likewise, exclusive neurotropic behaviour. The demonstration of the virus in the guinea-pig was regularly accomplished in the brain, but partly also in the blood.

After the passage of the virus through mice, its virulence was decreased for horses. After 74 passages it remained still unsuitable for immunisation purposes. The virus retained its septicæmic character for horses even after prolonged passages through mice. Undoubtedly the possibility of transmitting the virus of horse sickness to small laboratory animals will be likely to facilitate further research with African horse sickness.

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[The Foreign Body Operation rendered suitable for General Practice by the Use of Extraperitoneal Suturing of the Rumen. Götze, R. (1934.) *Deuts. Tierärz. Wschr.* 42. 23 and 24.]

The novelty of this modification of the rumenotomy operation for the removal of foreign bodies from the stomach of cattle lies in the fact that the rumen is sutured to the border of the laparotomy wound before opening it, and that the opening in the rumen is closed at the completion of the operation by interrupted Lembert sutures, the rumeno-abdominal artificial union being left intact until the actual rumenotomy wound is seen to be perfectly healed. Not until then is the rumen released from the abdominal wall and the latter closed.

The author, professor of cattle diseases at Hanover Veterinary College, writes from considerable experience in traumatic gastritis and its treatment in cattle. After trials with laparotomy at various positions in the abdominal wall, he has now returned to the original rumenotomy operation through the left flank as being superior on the whole, though rather unsuitable to a man with short arms.

Like Maurer [see *Vet. Rec.*, July 7th, p. 765], Götze holds the opinion that traumatic reticulitis and peritonitis can be diagnosed with a considerable degree of certainty, the main point of evidence being the showing of more or less sudden pain by grunting or groaning when appropriate tests are applied: this is apart from the characteristic "wooden" stance of affected animals and their reluctance to move. A short groan uttered by a bovine is highly suggestive of foreign body when the following three tests are carried out—nipping and pressing the backbone, percussing the body in the xiphoid to umbilical region and along the line of insertion of the diaphragm, and the use of a broom handle held by two assistants (one on each side of the animal) to apply upward pressure on the body in the region of the reticulum and anterior part of the rumen.

The whole problem of all the troubles which may arise from an ingested foreign body, the differential diagnosis and treatment are gone into very fully and attempts at treatment without the actual removal of the cause are condemned.

J. E.

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[Pulpy Kidney Disease in Young Lambs in North Wales. Montgomerie, R. F., and Rowlands, W. T. (1934.) *Vet. J.* 90. 10. Oct., 1934. p. 399.]

The authors have previously shown that toxin of the type produced by *B. ovitoxicus* is present in the intestinal contents of lambs dead from pulpy kidney (P.K.) disease.

Welch-like organisms were noted in smear preparations from the intestinal contents of all P.K. cases examined in 1933, and after seeding into horse-flesh meat medium, a Welch-like toxin-producing organism was demonstrated after three days' growth. This toxin was regularly neutralised by *B. welchii* type D antitoxin, but in no case by type A or type C antitoxins. It was therefore concluded that *B. ovitoxicus* was present in the gut of the 28 cases examined.

The type purity of these micro-organisms was then tested by making at least five subcultures from each original, and testing the resultant toxins for neutralisation with standard antitoxins. In all, 77 cultures from 11 cases were tested and toxin was absent in only two instances. Standard antitoxic sera were employed. Equal volumes of toxin and antitoxin were injected at blood heat into mice. The toxins of 55 strains, examined at 18 hours and again at six days, were neutralised only by *B. welchii* type D antiserum, and these isolations were therefore accepted as strains of *B. ovitoxicus*. In 20 cases the toxins produced were completely neutralised at 18 hours by *B. welchii* antisera types A, C and D. These were accepted as strains of classical *B. welchii* (type A). Detail is submitted showing that in six of the eleven cases, all the isolations proved to be *B. ovitoxicus*, indicating that no other type of *B. welchii* was present in the gut of these P.K. cases at the time of examination. On the other hand, in the gut

of a lamb killed *in extremis*, two types of *B. welchii* were detected, so it is clear that the bacterial flora in cases of P.K. may be mixed even at the time of death. Parallel technique was applied to the intestinal contents of a normal lamb, and *B. welchii* type A only was detected.

The fact that *B. ovitoxicus* can be isolated regularly from the gut of P.K. cases, and that a toxic substance—neutralised by *B. welchii* type D antiserum—is there elaborated, determines that pulpy kidney disease of young lambs in North Wales is an enterotoxæmia due to toxin produced by the proliferation of *B. ovitoxicus* (*B. welchii* Wilsdon, Type D) in the intestinal contents.

W. L. S.

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[Studies in Infectious Enteritis of Swine. VIII.—*Isospora suis* N. sp. in Swine. Biester, H. E., and Murray, C. (1934.) *Jl. Amer. Vet. Med. Ass.* 85. Aug. 1934. 207-219.]

The presence of *Isospora* (*I. suis* N.sp.) is recorded for the first time in swine.

Unsporulated oöcysts measure from 20-24μ × 18-21μ (av. 22·5 × 19·42μ) and sporocysts measure 16-17μ × 10-12μ. The unsporulated oöcysts are subspherical with a light yellowish brown double wall. After 24 hours in 2·5 per cent. potassium dichromate solution cleavage into two sporoblasts had occurred, in each of which the four sporozoites developed within four days.

Uninfected pigs were infected, and oöcysts were present in their fæces six to eight days after feeding, and persisted up to eight days. Anorexia and diarrhœa, followed by constipation, were observed in the infected pigs and a large amount of mucus and epithelial cells was present in the fæces during the infection. Control pigs remained negative. Pathological changes were confined to the small intestine, commencing with the first two or three feet of the duodenum. The lesions were those of a non-specific catarrhal enteritis, the microscopic changes consisting of destruction of the epithelium of the tips of the villi, never involving the epithelium lining the crypts except near the intestinal lumen. Interstitial inflammatory reactions occurred with a marked eosinophilic infiltration.

The writers utter a caution against over-emphasising the pathological importance of this *Isospora* and the *Eimeria* in pigs.

J. S. S.

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[The Inspection of Meat of a Yellow Colour due to Jaundice and Other Causes. (Trans. title.) Poisson and Thieulin. (1934.) *Rec. Méd. Vét. 110.* 6.]

The authors discuss the problems which arise during the inspection of "yellow" carcases, and state that, clinically, it is often impossible to differentiate between carcases which are of a yellow colour due to jaundice and those which are coloured from other causes.

Practical experience counts to a large extent and is facilitated by examination in daylight and access to the viscera. In many cases, however, the only means of arriving at a definite conclusion is by chemical tests to determine the presence of bile pigment. They mention the usual tests employed, but state that, for practical purposes, that of Piettre is the best, on account of its simplicity, its rapidity, and the ease with which the results can be interpreted.

The most suitable material for the test is synovia, but, in practice, it can only be obtained in an adequate amount from bovines; for the smaller animals, fat must be used, and that nearest the shoulder and kidneys is the most convenient.

The material is placed in a test tube and sufficient purified acetone is added to cover it. It is then gently heated for a few minutes in a water bath and a few drops of hydrochloric acid are added, thus liberating bilirubin. The solution is then cooled and filtered and a drop of very weak solution of sodium nitrate (1-500) is added. If bile pigments are present, the yellow liquid turns a more or less pronounced greenish blue colour (conversion of bilirubin to biliverdin). This test, they state, is reliable provided care is taken not to over-heat and also to add the sodium nitrate solution slowly, drop by drop. It is desirable to wait an hour, even if the colour change is instantaneous, before arriving at a positive decision.

In the adult bovine, yellow coloration of the fat is almost always due to pigmentation, jaundice being the exception. In the calf and pig, however, a yellow colour, even slight, generally indicates jaundice. Jaundice is very rare in the goat, whilst in the sheep it is found as frequently as non-biliary pigmentation.

With regard to the horse, the authors state that their experiments have shown anomalies and that, at this stage, they reserve their conclusions.

The differentiation of jaundice from pigmented meat is of great economic importance in the examination of the carcases of the larger animals, in view of their value and the frequency with which these conditions are encountered.

It is permissible to condemn yellow carcases in many cases on account of abnormal pigmentation, even if jaundice is not present. Yellow meat, however, is always under-rated as a food, and it is very disappointing that trade prejudices do not allow of its greater use.

H. E. B.

[**Electrical Stunning of Animals.** Weinberger, A. (1934.) *Vet. J. 90.* 8. pp. 337-340.]

This article is a reply to an article by Roost & Koopmans (*Vet. J., 90,* 6, pp. 232-245) in which these authors contended that the employment of electricity for the stunning of animals was open to objections for humane reasons. They examined this method of stunning and studied the effects produced in several classes of animals, concluding that the effect produced was that of a strong excitation of the cerebro-spinal and autonomic nervous system which caused violent muscular spasms. Paralysis or stunning of the nervous systems was not produced, and they suggested that the effect was rather the opposite —it being possible that consciousness and the perception of pain were not lost.

Weinberger attacks these authors and the methods they employed in their experiments, stating that they have given an entirely wrong idea of the "electrolethaler," which is being used with great success in over a thousand abattoirs for the stunning of 50-60 million pigs and 10 million sheep annually. He names the eminent authorities in Germany who have studied his method of stunning and states that the effect produced is a very strong anæmia of the brain. Unconsciousness is produced in a fraction of a second and increases until, in 10-15 seconds, deep unconsciousness is produced which will persist for 3-5 minutes if the current is then switched off. All pigs in England, Denmark and Belgium, up to a short time ago, were bled without any stunning, but electrical stunning has now provided a humane method of slaughter. [This is a mis-statement; "all" should have been deleted by the author.]

H. E. B.

A STORY OF SIR FRANCIS DUCK

In a recent issue of the *Journal of the Royal Army Veterinary Corps,* there is given the following example of the chivalrous fairness of Colonel Sir Francis Duck, K.C.B., F.R.C.V.S., whose death in May last we recorded at the time: "When the Zulus were broken at Ulundi the mounted troops were released from the square and went in pursuit. Duck stopped a Zulu with a bullet in the hip; he could easily have killed him with his revolver, but did not regard it as fair to a wounded man, so he fought the Zulu on foot with his own national weapon, the assegai, and killed him. One would like to think that the Zulu appreciated the situation."

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According to a statement made by Mr. J. M. Munro, of the Department of Agriculture for Scotland, 1,085 musk rats were killed in Scotland, these being the progeny of nine that escaped in 1927.

Colonial Report

CYPRUS

ANNUAL REPORT OF THE VETERINARY SERVICE FOR THE YEAR 1933

The staff consisted of a Chief Veterinary Officer (Mr. R. J. Roe, M.R.C.V.S., D.V.S.M.), a Veterinary Officer (Mr. F. H. Manley, M.R.C.V.S., B.V.SC.), a Veterinary Inspector, two first-grade stock inspectors, six second-grade stock inspectors, one veterinary compounder, one laboratory assistant, one hospital orderly and a clerk. In addition, there was a temporary staff of vaccinators and quarantine guards.

The livestock census of the colony in 1932 was: 4,612 horses, 10,273 mules, 53,738 donkeys, 1,298 camels, 43,604 cattle, 224,030 goats, 304,437 sheep and 26,896 pigs. The numbers of poultry and dogs are not stated.

Disease Control.—Continued drought caused a serious shortage of pasture and water, which greatly debilitated the animals and rendered them easy prey to disease, with a resultant heavy mortality. Despite this setback, the service continued to expand its beneficial influence amongst the stock owners, who are now more readily prepared to co-operate in measures for disease control.

Anthrax.—This continues to be the premier enzoötic disease—49 outbreaks with a mortality of 629 animals were reported—but the position shows definite improvement and is attributed to the fuller co-operation of stock owners in the vaccination campaign that was instituted a few years ago. During 1933, 475,564 animals were vaccinated, with highly satisfactory results.

Sheep-pox.—There was an unusually severe epizoötic of this disease during the year, which involved over 100 village areas, with very severe losses. The mortality averaged from 5 to 7 per cent. of the affected flocks, but exceptionally it was as high as 30 per cent. A curious feature about this outbreak was that there was no evidence of the disease in the colony since 1922 and no way of accounting for its recent introduction. A not unreasonable suggestion is tentatively offered to explain it, *viz.,* that in consequence of the debilitated condition of sheep following on the prolonged drought, contagious pustular dermatitis, which is enzoötic but usually of a mild nature, assumed virulent characters with clinical manifestations of sheep-pox. Vaccination by the old "ovination" method gave unsatisfactory results. Laboratory experiments, however, indicated that a more effective immunity could be established with virus treated with boric acid or formalin.

Lameness in Cattle.—A condition causing considerable loss to farmers and having features

like styfsiecke of South African cattle, due to aphosphorosis, is described. Lameness appears usually in the winter months and most frequently in working cattle after the ploughing season starts. The lameness tends to shift from limb to limb. In some cases there is thickening of the pasterns; in others, swelling of the epiphyses (of other leg bones?), while in others there is no appreciable alteration in the bones. After the lameness has persisted for one to four weeks the animals usually are unable to rise and are then slaughtered. The disease is more prevalent in winters following springs during which little green food was obtainable. Facilities are not yet available for biochemical investigation of the disease.

Metozoan Parasitism. — Gastro-intestinal worms cause considerable losses. In equines habronema infestation is prevalent. The stomach lesions cause much debility and the "bursattæ" sores in the skin are difficult to cure. Carbon tetrachloride is a useful germicide for the adults in the stomach. Stomach parasitism of sheep and goats responded well to copper sulphate. Liver-fluke disease is prevalent in irrigated areas and was treated successfully with carbon tetrachloride given both in capsules and injected intrarumenally. Lung worms of sheep and goats were treated by intratracheal injections of turpentine, chloroform, carbolic acid and olive oil mixture, with good results. The sheep-nostril fly was one of the chief causes of sheep mortality and hypoderma larvæ caused considerable damage to goat skins.

Other Diseases.—These included blackquarter in cattle, tetanus in horses (usually followed castration), contagious abortion of sheep and goats (*S. abortivo-ovinus* has been identified as one cause, but *B. melitensis* is also suspected), goat-pox. Amongst poultry were encountered fowl cholera, fowl-pox, fowl paralysis, fowl typhoid, avian spirochætosis, tuberculosis, coccidiosis and worm infestations.

At the veterinary laboratory most time was given to anthrax-vaccine production and research bearing thereon. Two hundred and sixty-six thousand doses of sheep vaccine and 231,000 of goat vaccine were prepared. Saponin-treated vaccine gave severe local reactions and was discontinued for the time being. Two experimental vaccines for sheep-pox were prepared, by the addition of 1 per cent. boric acid solution on the one hand and 0·1 per cent. formalin on the other to the filtrate of an exudate from an artificially produced subcutaneous lesion. The former was stored for 14 days and diluted three times with distilled water before use. (It is not stated how long the latter was stored before use). Vaccination was made subcutaneously in the tail. Subsequent immunity tests were satisfactory. Five hundred and four morbid specimens were examined at the laboratory.

Meat and milk inspection is an important branch of the service. The former is governed by a Milk and Dairies Order under the Food and Drugs Act. Considerable improvement has been effected in the organisation of meat inspection and up-to-date methods of humane slaughter have been introduced in the abattoirs.

W. K.

N.V.M.A. Divisional Reports

CENTRAL VETERINARY SOCIETY

Professor Wooldridge on the International Veterinary Congress

THE PRESIDENT AND "THE RETURN OF THE SADDLE HORSE"

The presentation by Professor G. H. Wooldridge of an informative and most interesting report in his capacity as the delegate of the Central Veterinary Society to the Twelfth International Veterinary Congress at New York, and a contribution by the President (Mr. L. S. Balls) in similar vein, but preceded by a heartening discourse on the return to popularity of the riding horse, were much appreciated features of a meeting held in the Conway Hall, Red Lion Square, W.C.1, on the evening of December 6th, 1934.

There were present Mr. L. S. Balls (in the Chair), Mr. W. Brown, Capt. R. Bryden, Capt. R. E. C. Bullen, Major Colin Davenport, Lieut.-Colonel H. Greenfield, Mr. L. Gabriel, Messrs. J. W. H. Holmes, A. J. James, H. D. Jones, H. C. P. King, Herbert King, Major Hamilton Kirk, Capt. W. J. Leyshon, Miss B. L. Lock, Professor James Macqueen, Dr. James McCunn, Mr. G. H. Mills, Dr. F. C. Minett, Mr. J. W. Perryman, Mr. J. W. Pritchard, Miss K. W. Shedlock, Miss M. Stewart, Dr. A. W. Stableforth, Capt. R. J. Stow, Professor J. G. Wright, Professor G. H. Wooldridge, Dr. W. R. Wooldridge and the Hon. Secretary (Mr. H. E. Bywater).

The minutes of the Annual General Meeting, and the report of the Annual Dinner of the Society, having received publication in *The Veterinary Record*, were taken as read and were signed as correct.

Correspondence.—(1) From Lt.-Colonel E. P. Argyle, Miss C. M. Ford, Mr. G. N. Gould and Major R. F. Wall, apologising for their inability to attend the meeting.

(2) From Mrs. Scott, acknowledging the letter of sympathy sent from the Society in connection with her recent bereavement.

(3) From the Secretary of the N.V.M.A., enclosing a copy of the Association's memorandum and articles of association. These, said the

Hon. Secretary, were available for the inspection of members.

Obituary.—The President now referred to the passing, since their last meeting, of a member of long standing in Mr. J. W. Baxter, of Knightsbridge. A Fellow of the Society represented them at the interment, and a letter of condolence had been sent to the widow. The meeting stood in silent tribute to the memory of the deceased.

Nominations for Fellowship.—The following nominations were made: of Mr. John James Allan, of Peterborough (Proposer, Capt. W. K. Townson; Seconder, Dr. J. McCunn); Mr. L. Jordan, County Hall, Chichester (Proposer, Mr. J. W. Prichard; Seconder, the President); Mr. C. G. Thomson, 48, Hornchurch Road, Romford (Proposer, Mr. R. Bennett; Seconder, Mr, R. A. Philp).

Elections to Fellowship.—The following gentlemen were elected as Fellows of the Society: Mr. R. R. Dalling, "Bryn Castell," Gaergwrle, Flintshire (Proposer, Sir Frederick Hobday; Seconder, Major T. Dalling); Mr. A. C. Dixon, 228, High Street, Berkhampsted (Proposer, Sir Frederick Hobday; Seconder, the Hon. Secretary); Mr. T. H. Michie, 41, Brighton Road, Coulsdon, Surrey (Proposer, Sir Frederick Hobday; Seconder, the Hon. Secretary).

MORBID SPECIMENS AND CASES OF INTEREST

Major C. Davenport said that he had three specimens to show them that evening and they were so remarkable that they might be said to be illustrative of the saying that truth was sometimes stranger than fiction.

The first specimen was the cannon, pastern and sesamoid bones of a horse, fused into one piece.

The subject of the case was a horse issued to a military riding school about six months ago. He inspected that horse on arrival and to his amazement found that it was suffering from anchylosis of the fetlock joint on the near fore, although the horse trotted up quite sound. He had seen anchylosis of the fetlock several times, particularly in the East, but in all the cases which had come to his notice there had always been a great deal of thickening round the joint, concerning which one had always been in doubt whether the immobility of the region was due to the fusion of the bones or to the enormous amount of new tissue. The present case was particularly remarkable (1) in that the animal went absolutely sound and (2) because there was no thickening whatever in the region—so much so, that on looking at the horse there was nothing about the leg to catch the eye.

The history was that the animal had been bought in Ireland in May, 1933. He had slipped between the truck and the rail of a siding when entraining and sustained a severe injury to the near fore fetlock. However, by October he was a sound horse. His only difficulty was that in jumping he tended to carry the leg and therefore brush his fences. For that reason he was eventually destroyed, as being unsafe for cadets to ride. On *post-mortem* examination the whole of the ligaments and tendons were found normal but on boiling out the leg there was complete fusion of the cannon and pastern bones. There was no exostosis around the articular surfaces.

When they thought of the numerous minor defects of the fetlock region that caused so much trouble, and then they saw a condition such as that, which had caused no lameness at all, he felt that they were obliged to admit that their professional life at times could be particularly aggravating.

The subject of his second case was a mare upon which ovariotomy had been performed. The operation had gone off quite nicely. On the third day, however, she suddenly developed a violent attack of colic. This happened at night. He went down to see her with the thought in his mind that probably a piece of bowel had descended through the operation wound into the vagina. She was in violent pain and he had to chloroform her in order to examine her. He found no protrusion of the bowel. He shot her an hour later in extreme pain. His diagnosis was a twist or strangulation. The piece of tissue exhibited was a section from the abdominal wall: they would note two peculiar strands stretching across it—between these a piece of the bowel had become involved and strangulated. He thought it was the most remarkable case of strangulation in the horse that had ever come to his notice.

The third exhibit was a badly twisted stirrup iron. This concerned a riding horse which slipped up on tarmac. The animal was saddled at the time but fortunately no one was on his back. He understood that the teaching nowadays was that they should not use nickel stirrup irons, for that particular reason, but the stirrup exhibited was a steel one. The horse was brought to him the next morning and he was amazed to find nothing but a small bruise over the ribs. In ten days the animal was fit for duty. Nevertheless, he was certain in his own mind that there must be a broken rib. Some months afterwards the horse was destroyed and *post-mortem* revealed the fact, as they could see from the rib which he would pass round, that a fracture was caused at the time of the accident. The interesting point of that case was the wonderful power of resistance of the ribs: the enormous blow the ribs could stand without involving the lungs or causing a serious injury within the chest cavity.

Capt. R. J. Stow said that he had, to show them, what he thought was rather an interesting specimen, but he was rather doubtful—indeed,

very doubtful—about giving it a name. On the previous Tuesday afternoon a client came into his surgery, produced that specimen, and asked him if it was a cow's ovary. He (Capt. Stow) told him that he was sure that it was not. The client then informed him that he had had a heifer calve that morning—at the normal time, and with a normal calf and afterbirth—but that his cowman had found that lump in the afterbirth. The cowman had taken his knife and cut it nearly in half, which had rather spoiled the specimen, but in his (the speaker's) opinion it was a second fœtus : there was a cord attached to it, and there was quite a substantial growth of hair. He trusted that Dr. McCunn would be so kind as to take it to the College, have it examined there, and let them know the result.

He desired also to recount the case of an eight-year-old Percheron mare. She was in foal and turned out to grass, when she was found with the extensor pedis tendon of the off-hind leg cut completely in half. When he saw her on October 4th, (the day the accident happened) she was dragging her toe and could not get it forward. He thought that if the toe could be kept forward there was a chance of the tendon healing ; accordingly, he had the shoe removed and a D-shaped piece welded on to the toe of the shoe and the shoe replaced He had a contrivance made consisting of a strap lined with felt which buckled round the leg above the hock. To the front of this strap was another strap running down the front of the leg, attached to the lower end of which was a strong spring, about six inches long. At the lower end was a spring hook which hooked into the D on the toe of the shoe. By this means the toe was kept well forward, and it had the desired result, for she walked fairly well about two days afterwards, and she is now walking sound. The appliance (exhibited) was kept in position for about five weeks.

Photo of the appliance (taken December 13th). Unfortunately the shoe with the D at the toe had been removed and an ordinary shoe put on, so in the photo the spring hook is held in position only by a string. The mare has been working this last week perfectly sound.—R. J. S.

The President exhibited an os coronæ which showed a large bony deposit on the left lateral aspect. The horse in question had been laid by for two months following an accident, and shortly after resuming work had fallen terribly lame. He (Capt. Balls) ordered the destruction of the animal, and had the bone boiled out, when there were revealed a transverse fracture of the os coronæ and the fact that the portions of the bone concerned had become cemented together again.

Proceeding, the President observed that the calculi (exhibited) had been removed by him from the urethra of a dog about six years old : he hoped that the animal was going to recover, but unfortunately it died. What he thought remarkable about the case was the number of calculi—it was a difficult matter to get them all out without damaging the urethra. He had also for their inspection a calculus that came out of the bladder of a Sealyham terrier : the stone completely filled the bladder in consequence of the thickening of the walls of that organ produced by its presence.

Discussion

Discussion on the foregoing specimens and cases was opened by Mr. W. Perryman, who first congratulated Major Davenport on the most interesting specimens shown by him—they were quite exceptional in character, especially that of the fetlock : in fact, it seemed inconceivable that anchylosis could take place like that without a good deal of deposit around the joint itself. He should like to know whether at the time of the accident there was any swelling around the joint itself. How nature had cleared the callous deposit away in that manner he did not know. He thought their friends at the College would like to have that exhibit, if Major Davenport was willing to deprive himself of the possession of so interesting a specimen. He also

desired to ask if all the other joints were perfectly clean.

In reference to the rib, he thought that Major Davenport had not told them if the animal was killed for that or for some other reason. He presumed that before it was boiled out there was a good deal of deposit all round it, and therefore there would be some sort of union for a time. Personally, he had seen injuries to the ribs, particularly the last one or two, where one got the cartilage knocked right off and the animal eventually developed a lump. Occasionally, in general practice, one knew that an animal had had an injury in that region, but it was remarkable how that horse worked and showed very little inconvenience, unless the broken ends of the rib eventually penetrated the lung. He would leave it to the professors present to tell them more about the third case recounted by Major Davenport, but he thought the whole series remarkable.

A case such as the second recounted by Capt. Stow was a very severe injury; when a veterinary surgeon was confronted by such a case he had to ask himself, "What shall I do?" Capt. Stow had shown considerable skill and ingenuity in answering that question in the successful manner he had done, and he (Mr. Perryman) would like to know how the case was going on. He presumed that the horse would have a big fibrous thickening which would be a disfigurement, and would reduce the market value considerably, but the animal eventually would be capable of doing good work.

Major H. Kirk asked Major Davenport if he could give the meeting any opinion as to what was the nature of the strands to which he had referred as being present in the section of abdominal wall from the case of strangulated gut. In regard to the cystic calculus exhibited by the President, its size did not represent the total dimensions of the bladder. Doubtless the organ was empty, for a dog's bladder would hold 10 ounces of urine when full.

Capt. Stow expressed particular interest in the stirrup exhibited by Major Davenport, saying that he had one of that type when a horse he was once riding across the Square at Poperinghe during the war came down—he just managed to get his foot out in time.

Dr. F. C. Minett observed that, with regard to the specimen exhibited by Capt. Stow, he should say that it was a maldeveloped twin fœtus. This was suggested by the hairy nature of the object, but as it was not cut across the centre, one could not say much about its contents. Such a twin, if located inside the testis or ovary, as was sometimes the case, would be referred to as a teratoma, *e.g.* the not uncommon "dermoid cyst" in the horse. In Major Davenport's specimen, it would appear that the two strands, beneath which the portion of bowel had become imprisoned, were strips of fascia covered by peritoneum. With regard to the anchylosed fetlock there was some productive osteitis about the joint, but it was inconsiderable and would no doubt be difficult to detect during life.

The Hon. Secretary, speaking with reference to the fractured rib, said that that was a condition well known to meat inspectors, and it might be of interest to those present to know that in a slaughter house it was common to see the carcase of a bullock, which had evidently been in perfect health at the time of slaughter, in which there was found a callus on the ribs. The pleura covering this callus was usually thickened; as a rule in such cases, however, there was no actual pleurisy—the lung itself had escaped injury and it was common to find an entire absence of adhesions between the pleura covering the lungs and the chest wall. He was inclined to think that the pleura was a very tough and resistant membrane, and it was probably due to this fact that more serious results were not common following upon rib fracture.

12th INTERNATIONAL VETERINARY CONGRESS, NEW YORK, 1934

Report by Professor Wooldridge

The next business before the meeting was to receive the report of the delegate to the 12th International Veterinary Congress held at New York in August, 1934. This was presented by the delegate, Professor G. H. Wooldridge, F.R.C.V.S., M.R.I.A., and its interest was considerably enhanced by the presentation, by means of the Royal Veterinary College epidiascope, of a number of excellent photographs and other illustrations.

The report was as follows:—

I propose to give you some ideas relative to the Congress, which, as your delegate, I attended, at New York and at certain institutions subsequently. The British party mainly travelled by Cunard liner S.S., "Scythia," leaving Euston on Saturday morning, August 4th, at 8.35 a.m., for Liverpool. The boat called at Queenstown and Galway on the way out, and the crossing was fairly good all the way, though I observed, from the Captain's Log, that there was a rough sea the first two days; I am glad to say, however, that none of our party realised the fact. The British delegation on board the "Scythia" numbered 32, including members from the Colonies and Dominions overseas. Other members of the delegation, however, travelled by other boats, so that the total, including ladies, present at New York, exceeded 50. On the voyage out in mid-Atlantic, we were very delighted to receive a message of welcome by wireless from the Massachusetts Veterinary Association, to which a suitable reply was sent

by our leader, Professor Buxton, indicating our probable time of arrival at Boston. We were there met by a party of Boston Veterinary surgeons, who conducted us to our train for New York. This pleasant surprise was made all the more delightful by their kindly thought in the presentation to our ladies of lovely nosegays. Our arrival in America was, therefore, most auspicious. The welcoming party included Dr. Crossman, Dr. and Mrs. Vermilya, Dr. and Mrs. Schroeder and others. We proceeded to New York, arriving about midnight, and were again welcomed by members of the Reception Committee including Dr. Campbell, of Chicago, Dr. Dick, Philadelphia, and Dr. Hagan, Ithaca, and proceeded to the Waldorf-Astoria Hotel, where accommodation had been already reserved, and at which magnificent hotel the Congress was to be held.

The opening meeting took place on Monday morning, Dr. Mohler (the President) in the Chair, and it was officially opened by the Honourable Henry A. Wallace, Secretary of Agriculture, Washington, D.C., who spoke of the work of the Veterinary Profession throughout the world, and in America in particular, in highly complimentary terms. We were officially informed that there were over 3,000 members of the Congress—a number far exceeding the previous record of 1,546 in London, in 1930. Greetings were then presented by official delegates of foreign countries, Mr. Kelland, of the Ministry of Agriculture, speaking for the British delegation. The President then announced the order of procedure for general and sectional meetings, and named the officers to take charge of the respective sections. Our Society was honoured by the appointment of your delegate, as President of Section II (Medicine, Surgery and Obstetrics), a section which was probably the largest attended of all, and held the greatest number of meetings. (Applause.) The Vice-Presidents of the sections were: Dr. Gerlach (Austria) and Professor Forssell (Sweden) with Dr. McGilvray (Canada) as Secretary. Other honours included the appointment of Dr. Andrews as Vice-President of the Section of Pathology and Bacteriology, of Dr. Greig as Vice-President of the Section of Parasitology and Parasitic Diseases, and of Dr. Du Toit (South Africa) as President of the Section on Tropical Diseases. As I was, therefore, busily occupied with the work of one section, I was unable to attend other meetings.

It is unfortunate that copies of the papers were not available for members of the Congress, though on our arrival we received authors' summaries of the various subjects on which they were to speak. It is therefore impossible for me to give a comprehensive account of the work done in these sections. Nor is it very necessary, since the *Veterinary Record* is reproducing those authors' summaries in a manner far better than I could do. A vast amount of work was accomplished and many new, though not unanimous, views were expressed in the various sections; indeed, so far as I was able to judge, the discussions were very animated and well sustained.

In the section under my charge, the range was very wide, and included such subjects as:—"Infectious Mastitis," on which subject Dr. Minett delivered a most illuminating address; "Diseases of Young Animals"—Professor W. L. Williams, of Ithaca, who is well known to so many of us, was very masterly when dealing with this subject—and "Milk Fever," on which a good discussion also took place, during which Professor Hayden and Professor Russell Greig reported a procedure for reducing the incidence of local reactions and abscess formations following the injection of calcium gluconate subcutaneously. They pointed out that the local reaction was mainly due to the calcium salt coming out of solution, and the following method was recommended: calcium gluconate, 2 ozs., boric acid 3 drms., water 12 ozs.: the mixture is boiled for a few minutes until complete solution is attained, after which it may be kept for a prolonged period without risk of precipitation. Before injection, the solution should be warmed to approximately 110° F. The injection is made sub-cutaneously at two or more points in the region of the neck. By this method a relatively small volume of solution is required and the risk of local irritation and abscess formation is stated to be markedly reduced, if not entirely abolished. Other subjects discussed in this section were "Sterility," and "Recent Progress in Veterinary Surgery," to which Sir Frederick Hobday sent a contribution.

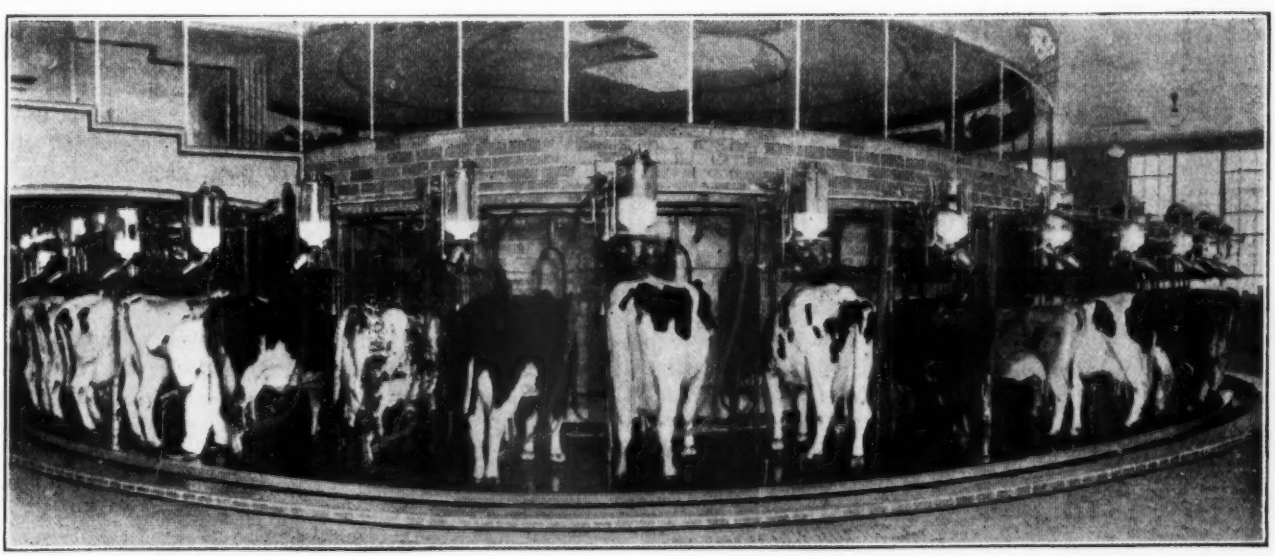
In other sections, papers were presented by Col. T. D. Young, on "Meat Inspection"; Professor Linton, on "Canine Nutrition"; Dr. Andrews, on "Foot-and-Mouth Disease Preventive Measures"; and by Professor Buxton, on "Tuberculosis." These various subjects were, of course, spoken to by various other authorities, and I strongly recommend all members of the Congress to devote a considerable amount of time to reading the papers when they are ultimately published in the proceedings of the Congress. The subject which perhaps called for greatest differences of opinion was the B.C.G. vaccination for tuberculosis, and it is somewhat remarkable what widely divergent views were expressed in regard to its efficiency. Generally speaking, the French and British representatives were strongly in favour of the procedure, while the German and Canadian representatives were opposed to it. Professor Buxton emphasised the strong resistance to inoculation with virulent cultures possessed by vaccinated animals. Dr. Watson, Canada, was

equally strong in denouncing it. A climax was reached when a German delegate boldly proposed that in the view of the International Congress the whole procedure of B.C.G. vaccination be condemned and abolished. The proposal however was howled down in derision and it seemed obvious that the majority of the members of the Congress did not agree. We were subsequently permitted to see some of Dr. Watson's pathological specimens illustrating lesions of acute tuberculosis which he stated were produced in vaccinated animals. It may be that there is some explanation for these failures, which Watson has not discovered, but in the absence of any satisfactory explanation, their occurrence is very disquieting, particularly in view of the great contrast with the results obtained in this country. The conclusion one arrived at in this connection was that one is unable freely to recommend its adoption at present, and that much work is still required in this subject.

At the close of the Congress, there was a meeting of a special committee (of which I was a member) for the award of the Budapest prize, which was to be presented to that member of the profession who, in the opinion of the Committee, had carried out the most outstanding work during the previous ten years. It is gratifying to record that the award was made to Sir Arnold Theiler, a member of the British party. (Applause.)

During the week of the Congress, there were other functions to attend, of a semi-professional character. They included a visit to the large milk distributing plants, which had to be carried out in the small hours of the morning. I attended, along with others, but am glad to say that the plants and methods adopted in this country by the big milk distributing companies are very similar to those obtaining in New York, and it is well to know that we are not in any way behind the times in this respect. A visit was made to the Lederle Institute, presided over by the genial Dr. Eichhorn, which was both interesting and instructive.

Another very interesting and instructive visit was to the farms of the Walker Gordon Laboratory Company, at Plainsboro', New Jersey, where an absolutely unique method of the handling of milking cattle was carried out. The herd comprises over 1,000 milking cows, together with numerous heifers being raised for replacements. The breeds consisted of 40 per cent. Holsteins, 40 per cent. Guernseys, 15 per cent. Jerseys, and 5 per cent. Brown Swiss. The herd is milked three times daily. The average daily ration per cow consists of 30 lbs. ensilage, 9 lbs. dried alfalfa hay, 9½ lbs. grain, and 3½ lbs. of dried beet pulp. The grain concentrates are fed on a production basis of 1 lb. to each 3 lbs. of milk yielded. The cows are dried off at least ten weeks prior to calving. The milking is done in a rotary milking unit, called a Rotolactor, and has been in operation for about four years. It consists of a circular metal platform, 60 ft. in diameter, that will hold 50 cows, and rotates 15 ft. per minute. On this circular platform the cows are washed with showers of warm water, and dried by means of warm air from electric drying machines. The udders are next wiped, each with a fresh sterilised towel. The fore milk is then taken, after which, the milking machine is applied, the milking units being sterilised after each cow. The milk from each cow is collected in separate vessels and only mixed after found to be correct. Stripping is done by udder manipulation or massage with teat cups attached, thus eliminating almost entirely any hand stripping, except in rare cases. By this procedure, 200 cows per hour are milked, the cows stepping on and off the moving platform



THE ROTOLACTOR

at the rate of one every 18 seconds. It takes about 15 minutes for each cow to complete the circuit of cleaning, fore milking, milking and stripping. I will pass round a picture showing the cows on the moving platform. The container for the milk will be seen above each cow.

This remarkable procedure results in the production of milk of a very high standard of cleanliness, such as would be difficult to obtain by any other means. I doubt if it could be made an economical procedure in this country, but in America there is a great demand for Walker Gordon milk, which is sold at a high figure, and one is left wondering whether such a sale could be created for milk of such a high standard and price in this country.

Another remarkable installation on this farm is the forage-crop dehydrator, by means of which alfalfa hay and other leguminous plants are preserved. The hay is cut and the drying operation is completed in about 20 minutes, with moisture content reduced to 12 per cent. or less. It is claimed that this forage is very much more valuable than if it had been made into hay in the ordinary way. It certainly looked and smelled very nice indeed. There is no bleaching and no reduction in nutritional value; indeed, it is claimed to contain seven times as much vitamin A as in field-cured alfalfa. I was also struck with the enormous size of the silos, which were circular, 70 ft. high, and 40 ft. in diameter, and which, according to the guide who took me round, hold 1,500 tons.

While in New York, I took the opportunity of paying a visit to the Ellen Speyer Hospital for animals, which is largely carried on by endowments and voluntary subscriptions. One was convinced of the excellent work carried out there, and more or less astounded at the wonderful equipment. It is staffed by qualified veterinary surgeons.

On the Saturday of a very full week, surgical demonstrations were arranged on small animals at the College of Pharmacy at Columbia University. This was one of the most popular features of the Congress, a large theatre being packed to witness a wide range of operations, all carried out in a most successful manner. One hopes that this item will be retained in future Congresses.

On Saturday night, a large itinerary party of about 100 left by train for Ithaca, where we were entertained and inspected the Veterinary College of Cornell University. The staff had been to an enormous amount of trouble to make our visit most instructive, and we owe them a great debt of gratitude. It is impossible here to give even a superficial idea of what was presented to us.

Our next stop, from the professional point of view, was at Chicago, where we arrived on the Tuesday night, to meet with the most generous reception, such as we had by this time learned to associate with our American hosts. The following day we made a tour of the stock-yards, slaughter houses and packing houses and it is difficult to imagine the immensity of it all. For instance, the stock-yards possess 14,000 pens; the slaughtering of pigs at Armour's went on at the rate of 1,200 per hour, and at Swift's 750 pigs per hour, while sheep were slaughtered at the rate of 500 per hour. I was extremely sorry to note the absence of any mechanical methods of stunning for any type of animal. The meat inspection was carried out in the most thorough manner, and I was informed by Dr. Mohler that there were 411 Government Meat Inspectors normally engaged at the stock-yards, while at the time of our visit an additional 300 were employed on account of the large number of Government cattle (87,000 per week) brought in from drought areas for slaughter. These poor, starved creatures presented a most pitiful sight. I was interested to learn that the fast freezing method was adopted for beef, the sides being refrigerated at minus 45° C., and afterwards removed to cold chambers at zero or therabouts. It was not considered good procedure to send the carcases slowly through cooling rooms to lose the natural body heat before refrigeration.

In the evening, the foreign delegates were entertained to a banquet by the Meat Packers' Institute; and amongst others the Consul-General for England was present. I was called upon for a speech, in response to a toast of the British delegates, and I took the opportunity of criticising the absence of stunning prior to slaughter, and recommended the institution of the electro-lethaler. I learnt, however, that considerable experimental work had been carried out some time ago, with this method, but it was not found to be satisfactory. I strongly urged, nevertheless, that the method be again tried by a more recent type of apparatus, and I have every reason to think that our protest will bear fruit. (Applause.)

Our next important call was at Guelph to visit the Ontario Veterinary College. The surroundings of this Institution, like those of Ithaca, were almost ideal, and a considerable amount of money has been spent for the teaching of agriculture and veterinary science. We were here taken in hand by the President, Dr. Christie, and the Principal of the Veterinary School, Dr. McGilvray, and after a very instructive tour, we left for Toronto, inspecting on route a large silver fox farm, where over 1,000 foxes were kept, in excellent hygienic and humane conditions. We were at Toronto in time to see a portion of the enormous cattle show about to be held, some of the cattle having been brought over 2,000 miles from Alberta to be exhibited.

A feature of our experiences at Toronto was a

visit paid to the Don Alda Farm in the vicinity. The wealthy lady, Mrs. Dunlap, who ran this establishment somewhat as a hobby, and who, in her enthusiasm for hygienic precautions, sends her show cattle (for exhibition) by air, had built one of the most attractive cow-houses I have ever seen, both as to external and internal appearance. In point of cleanliness it rivalled the interior of many human habitations, and it was here that we made our second acquaintance with a most effective method of dealing with flies. The first was at the dairy at Ithaca, where the windows were fitted with a wire of fine mesh and this was electrified, with the result that the flies attempting to enter the building fell dead into a special trough placed below each window. At Don Alda the electrified killers were suspended throughout the cowshed like lanterns and were equally effective. None of the cows attempted to rise when the party entered, and their supreme and undisturbable contentment was something of a mystery to us until we heard the strains of music: it appears that at this establishment it has been proved that supplying soft and soothing music to the animals increases their milk yield, for, when the instrument was out of order for a day or two the yield dropped considerably. There was absolutely no dust in the shed as it was removed by vacuum dust extractors throughout the shed.

It was a matter of some regret to us that, while the accommodation for almost every other type of animal was at a similarly high level, that for the horse, which for veterinary surgeons still retains its place as the chief centre of interest, in regard to comfort and construction left much to be desired.

From Toronto we went to Ottawa, and there, amongst other things, paid a visit to the Laboratories of the Federal Department of Agriculture, Health of Animals Branch, at Hull, under the direction of Captain E. A. Watson. This Institution is excellently conceived, and the work carried out in a very convincing manner. Dr. George Hilton, the Veterinary Director-General for the Dominion, was here to greet us.

In Toronto, and Ottawa, reception committees had been arranged by the veterinary societies of each province, and it is difficult to say how grateful we were for all they did on our behalf.

After leaving Ottawa we proceeded to Montreal, where we arrived on the evening of August 28th. Next day we paid a visit to the McGill University Animal Pathology Department, and the Institute of Parasitology at St. Anne's De Bellevue. At the latter we were all delighted to see our old friend and former colleague, now Director of the Institute, Dr. T. W. M. Cameron, and his charming wife and daughter. The institute is at present in its infancy, but has already been responsible for much excellent work. It is not yet completed, and the staff are working under difficulties, which we hope will be removed in the near future. After a short visit to Quebec, we started our homeward journey to Boston, where we arrived in the early hours of Friday, August 31st. Here again we were taken in hand by the Massachusetts Veterinary Society, who about put the finishing touch on the high standard of hospitality with which we had been received throughout our visit. One important place we visited was the Angell Memorial Animal Hospital, where 150 to 200 cases, mainly small animals, are attended daily, and where they have an average of 150 animals constantly in hospital. This is a charitable institution, of a most remarkable kind, and is staffed by a most competent and hard-working team of veterinary surgeons.

We left Boston on September 1st, in the Cunarder S.S. "Laconia," and had a most enthusiastic send-off by our Boston hosts and their wives. The voyage home was a very comfortable and happy one, but our numbers were less than half of those who went on the "Scythia." We arrived at Liverpool on Monday, September 10th—a tired, but very happy party.

It is impossible adequately to express our thanks to all our friends on the other side who had done so much to make the Congress and our subsequent travels such a success; I am constrained, however, to mention just a few to whom I was personally indebted, yet I am almost afraid to do so, as I am bound to omit some that I would not willingly forget. First, there was a most genial and energetic President, Dr. Mohler; Dr. Eichhorn and Dr. Merillat, Chairman and Vice-Chairman of the Organising Committee, and Dr. Hoskins, the indefatigable General Secretary. To Dr. D. M. Campbell, Chicago, and his wife, many of our party, and I myself in particular, are under a very great debt of gratitude for their unfailing courtesy and kindness and the time they placed at our disposal. Nor can I forget the valued friendship and assistance given to the British Section by Colonel Foster, the Chief Officer of the Army Veterinary Service of the United States. Dr. McKim must be congratulated on the success of his Committee on local arrangements, and Dr. Zepp for his wonderful organisation of the post-Congress Clinic: nor can one forget that hard-working fund of good humour personified by Dr. Cassius Way, who was always at hand when the inner-man clamoured for attention. The ladies of the Congress were well catered for in every possible way, thanks to the unsparing efforts of an excellent committee presided over by Mrs. Fitch, Mrs. Ferguson and Mrs. Mohler.

During the post-Congress tour, we were placed under a deep sense of gratitude to the following people, amongst others—at Chicago: Dr. D. M. Campbell, Dr. Merillat, Dr. Eagle, and Mr.

Ferguson ; at Toronto : Colonel Evans and Dr. J. A. Campbell ; at Ottawa : Dr. Watson and his colleagues ; and at Boston : Dr. and Mrs. Schroeder, Dr. and Mrs. Vermilya, Dr. Crossman, Dr. Ryan, Dr. Killian, and Dr. and Mrs. Schmelle. There were many others who vied with one another to minister to our mental and corporeal welfare, but I am afraid that space will not permit me to pay to them the tribute that I would fain express.

It is decided to hold the next International Congress in Switzerland, either at Berne or Zurich, in 1938.

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PRESIDENTIAL ADDRESS

The Return of the Saddle Horse

The President (Mr. L. S. Balls), who now rose to give his address from the Chair, said that he would like to preface his observations by congratulating their delegate to the International Veterinary Congress upon his wonderful report. (Applause.) In his address he, too, was going to touch upon America, which he also had visited in the capacity of an attender at Congress, and he trusted it would not weary them too much to hear more about that great country ; however, he hoped to be able to avoid covering the same ground. He proposed to follow the example of Professor Wooldridge in another respect, nevertheless, for he also had some pictures to show them, his series being concerned with New York and Ithaca. The main portion of his address, however, was devoted to the subject of the return of the saddle horse. Continuing, the President said :—

No doubt many of you have noticed how the saddle horse has returned to its own once again : all the members of the young generation are taking up riding to a very large extent.

In my youth it was only the aristocrat who rode horseback and for the hire of a horse or hack in town 7s. 6d. to 10s. per hour was charged, but to-day even the office girl hires her horse on Sunday morning—needless to say, the horse's diet is cut accordingly, otherwise many of these riders would not be able to meet the charges incurred.

Riding establishments are springing up all over the country. Just recently I was discussing this matter with a West-End saddler who told me that 1933 and 1934 had been his best years since 1900. It has been said that with the falling off in horse practice the private practitioner has only canine and feline practice to which to attend, but I find that in certain neighbourhoods there is quite a lot of work to be done amongst the hacks and hunters. It is very sad to see some of the wretched screws that the novice rides, quite unaware of the unsafe nature of his or her conveyance, but in spite of some of these horses' many deformities, how many of these animals keep going and riders get pleasure from the pursuit ! The owners of these riding establishments do not experience the many troubles in horse flesh that I can remember in my boyhood days. Glanders was one of the dreaded complaints amongst horse owners : I can recall a riding master in Clapham Park who kept a stud of 30 horses and they were all killed one by one from this terrible complaint, until at the end he was left with one horse. This was, of course, in the days before compensation was allowed for slaughter and an outbreak of this description meant ruination to a man in any ordinary way of business. This man, however, being very popular in the district, my father, who had attended the stable, approached many of his clients and they collected a sum of money to start him in business again.

The younger generation are being brought up to appreciate riding and also to love horse flesh ; this can be seen at all the important horse shows and in the hunting field, thus enhancing the valuable effect the pony clubs are having upon the young folk—this was also seen at the display given by the younger members of the Meynell Hunt at Olympia this year. Many of these young people are fine horsemen and can be seen out with their elders in the hunting field. I think I am correct in saying that the nearest pack of hounds to the centre of London are the Old Surrey and Burstow Hounds, with whom a number of our city men hunt. Going back a few years, the town of Croydon, nine miles from Cornhill, was the general rendezvous of the sportsman on Saturday. The town furnished an interesting scene on a hunting day, particularly when the hounds used to meet at Addington, Hayes Common, etc., and it is curious to look over some old records and find here and there a few words telling how the hounds ran about Streatham, Dulwich and Sydenham and other places now embraced in the great city, and that not so long ago. Probably London is the only city which owes one of its finest bridges to fox-hunting. In the early part of the 18th century, the second Duke of Grafton hunted two counties, namely, the Grafton and a considerable portion of Surrey in the neighbourhood of Croydon. He frequently had to wait a long time for the ferryman to take him across the Thames when he was going to meet his hounds and it occurred to him that a bridge would be much more convenient, so he brought a bill into the House of Lords and got it through, and in 1748 Westminster Bridge was an accomplished fact.

While on the subject, another interesting fact has been brought to my notice. A Mr. Gobsell was master of these hounds (the old Surrey and Burstow) and kennelled them, of all places in the world, at Bermondsey ; there, till comparatively recent times, traces of the old kennels and

stables could be seen at a wharf in Bermondsey.

It is interesting to note that a member of our profession, Mr. A. Glover, has just celebrated his 75th opening meet with the pack. I am told that he attended the first meet after they became foxhounds in 1866.

A matter that has often been discussed with me by clients is the difficulty of having to ride on these dangerous tarmac roads, which, as you all know, are rendered very slippery by wear. Unfortunately, we have to hack on these roads and I, from my own experience, have found that the suction pad is the safest measure against horses slipping. This pad [exhibited] I always have fitted to the hind shoes. It fits inside the shoe, in contrast to the bar pad which is fitted behind the shoe. This pad gives the horse greater confidence and does prevent slipping. I do not advocate pads on the fore feet for saddle horses as they are, in my opinion, dangerous.

I was very interested in the horse shoeing in U.S.A. during my visit at the International Veterinary Congress. I noticed that all the heavy horses in New York were shod both in front and behind with bar pads. These pads were not the good looking bar pads that we use here, but a much larger and more awkward looking and clumsy contrivance, but I know and feel sure that if our heavy horses in London were shod all round with bar pads, it would lengthen their lives and save so much slipping about.

The U.S.A. police horse interested me. In Philadelphia, particularly, I was really surprised at the compact type of horse, 15·2-3 hands in height, again shod all round in bar pads for walking work. I got into conversation with a mounted police officer and told him of my mission in America; this interested him greatly, as he had been in England during the war, and he introduced me to his inspector who invited me to visit their stables at headquarters, where I saw 50 of the most level lot of horses you can imagine, all being of the same type. There seems to be much more care taken in selecting them for this work. They were short legged, cobby, with good fronts, and well balanced.

It is a pity that the horses in our mounted police are not all shod with pads, for I feel sure that the accident which happened to one of our mounted men at the recent Royal Wedding could have been avoided, namely, when the horse shied, slipped up and threw its rider just outside the abbey—if it had been properly shod. Until recently this class of horse has been shod with the all-rubber shoe, but as I predicted, it had a short life. It is a very clumsy shoe and fitting causes damage to the feet.

I noticed that the mounted police officer at Philadelphia was riding his horse in and out of the stationary motor cars along the main road and apparently taking the number of each car. Being out to learn all I could, I asked him what he was doing. He said that the owners of these cars were allowed 30 minutes standing and at the end of that time a police trolley came along and towed it away to a Police garage, where the owner had to go and claim his car (and guilty knowledge told him where to find it) and pay six dollars (25s. to 30s.) to get possession of it again; in this way the police were saved the trouble and expense of issuing a summons and time wasted by the owner at the Court, as is done in this country.

Now I have left the horse and will venture to give you some information as to the motor traffic in America, for, as we are all motorists here to-night, I think it may interest you. Firstly, I must admit that Americans are better drivers than we are, and of course the industry is older there, and with wider roads they have better facilities. Their traffic control is good and the traffic light system is amazing. In a long street lights are all "stop" or all "go" (red or green) for a long distance, therefore speeding up of traffic is general. The cars, of course, are all of high power and when the lights do change they are away like the shot out of a gun.

There is no horse-power tax, cars are taxed on weight and, best petrol being 7½d. gallon, the motorists in America have a very easy time. You must appreciate that the traffic is on the reverse side of the road and the cars are all of left-hand drive; to English people this looks at first sight very confusing, but you soon get accustomed to it.

On the arterial roads everything is done to speed up the traffic; there is no left-hand turn and also every car approaching the arterial road has to come to a full-stop before proceeding—this is a great idea and prevents numbers of accidents. Also, their idea of having a grass verge in the centre of main streets is a safe procedure.

The horse still holds its own in Ford's model village at Detroit, where to our amusement all the visitors were met at the entrance to the village by horses and carriages—the carriages being of every different period. We selected our vehicle and drove round the village; from there we went to Ford's motor works and saw a car assembled, beginning at one end of the factory and being driven away at the other.

At Chicago the great attraction for the profession was the stock-yards, which covered many hundreds of acres of ground and were indeed very wonderful. We also visited the World's Fair and one of the things that impressed me most was the marvellous stand belonging to Ford Motors. It was a very large circular arrangement, displaying every vehicle—beginning with the Roman chariot and on through the ages to the latest type of horse carriage (some types of these carriages I have never seen before) and, on the motor side, from

the first to the most up-to-date vehicle, namely, the 1934 Ford car.

Chrysler Motors had a wonderful exhibit, which seemed to cause a great deal of interest to the general public at the Fair and would probably have done to you. Behind their stand was a large sand-testing track with a tarmac road running round the edge with an iron barrier, behind which free seats were provided for 20,000 people. The chief object appeared to be to impress the public with the safety of the modern steel-bodied car of to-day. To do this, Barney Oldfield, America's oldest speed driver, gave a demonstration not only of speed driving but jumping a car 40 feet into the air and also completely turning a car over and back on to its wheels again, to prove that this type of body could withstand this ordeal.

We thought Chicago a beautiful city and set in the midst of some of the most glorious scenery: looking across Lake Michigan, one could hardly associate it with the world of crime that we read so much about in this country. Another beautiful city is Washington, but time will not permit one to go into details.

I will conclude by recounting the following episode, which may appeal to those of us who are interested in chemistry. It took place at Niagara Falls, but as it did not appear on our Congress itinerary, there were only two other members and myself to discover "*the burning spring*," as it was called. We entered quite a crude wooden shed with the inside in darkness. In the centre was a well with a barrier round it. We were told the history of this spring, which was as follows. Many years ago it was owned by Red Indians who, by accident, threw a lighted flint into it; to their amazement it caught light and they fled in terror. Returning many months later to make further investigations, they came to the conclusion it must be sacred. Some years later, white men came along and hearing about the burning spring, waged war with the Indians and took possession of it. A sample of the water was put into a receptacle and set alight; it burnt almost as fiercely as spirit. The attendant also put a gas pipe into the spring and lit the burner, which burnt like a Bunsen burner. A small quantity was poured into glasses and handed to each of us to taste and we found it just like ordinary water; when we returned the glasses to the man he turned them upside down on to the flame, which burned out the dampness in the glass. This water has been tested by some of the leading chemists all over the world and found to contain iron, salt, sulphur and magnesia, but the scientists are still at a loss to know why it burns.

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At the conclusion of his address the President, on behalf of Professor Wooldridge and himself, thanked Mr. Southern for attending and displaying the pictures on the epidiascope, the members also acknowledging their indebtedness to him with hearty applause.

Vote of Thanks.—Moving a vote of thanks to the President for his address, Major Davenport said that he felt particularly indebted to him for basing his remarks on the return to popularity of the saddle horse, for he (Major Davenport) was keenly interested in a movement which was destined to accelerate that process enormously. Last July they were successful in starting a branch of the Pony Club at Woolwich: they had 67 children riding and they would have more by Christmas—which, in a closed-in suburb such as Woolwich, was, he thought they would all agree, a very satisfactory state of affairs. (Applause.) The great difficulty with a pony club, however, was to find instructors, and if any of his hearers were resident in an area in which a branch of the Pony Club was functioning, the offer of their services would, he felt sure, be most gratefully accepted—this remark applied particularly to the ladies present.

On the proposition of Mr. Gabriel, seconded by Mr. Perryman, the meeting accorded a hearty vote of thanks to Professor Wooldridge for his report, and the proceedings terminated with the payment of a similar tribute to those who had brought *post-mortem* specimens, or who had recounted interesting cases.

H. E. Bywater,
Hon. Secretary.

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SCOTTISH METROPOLITAN V.M.A.*

Meeting at Edinburgh

A meeting of the Scottish Metropolitan Division, N.V.M.A., was held in the Royal (Dick) Veterinary College on October 31st at 2.30 p.m. The President, Mr. Esmond Brown, occupied the chair, and there were also present: Messrs. R. G. Anderson, William Anderson, A. R. C. Bowie, Professor G. F. Boddie, Dr. O. C. Bradley, Mr. A. Brownlee, Dr. Dryerre, Mr. A. Gofton, Drs. W. S. Gordon and J. R. Greig, Major J. Judge, Mr. J. Ker, Professor R. G. Linton, Major W. S. Lornie, Major J. G. MacGregor, Messrs. E. Mackay, W. D. Macrae and J. B. Mackie, Professor W. M. Mitchell, Messrs. W. Nairn, W. W. Peggie, Balfour Philp, A. Sillars, A. Spreull, sen., J. S. A. Spreull, J. A. Taylor, D. R. Wilson, H. M. Wilson, P. Wilson and the Hon. Secretary.

In addition, the following were present as

* Received for publication, November 27th, 1934.

visitors: Major G. W. Dunkin (London), Messrs. A. J. Adams, G. W. Burgess, John Cameron, W. Duncan, D. Evans, J. K. Elmslie, W. Harris, J. McLintock, J. D. McLaughlan, D. R. Macrae, J. A. McKinnon, J. G. Murray, J. L. Paterson, A. M. Shepherd, A. Robertson, T. F. Stokes, A. W. Taylor, R. M. Smith, E. G. Wood, and several students.

The minutes of the previous meeting, having been published in *The Veterinary Record*, were taken as read and signed as correct.

Obituary.—The President referred to the death of Mr. J. Henderson, M.R.C.V.S., Broughton. Mr. Henderson had been a Secretary of the Division and had also held the office of President in 1922. The members stood in silence as a tribute to the deceased member.

Correspondence. *Resignation.*—A letter was read from Mr. Hugh Bain, Wooler, intimating his resignation from the Division owing to his distance from Edinburgh and it was decided to accept his resignation with regret.

A letter was read from Dr. Bullock in connection with an appeal for the R.C.V.S. Library Fund. Dr. Bradley proposed and Professor Mitchell seconded that the Division send a donation of £20, and this was carried unanimously.

Membership.—Mr. E. G. Wood, Bread Street, Edinburgh, having been nominated at the previous meeting, was elected to membership on the motion of Mr. H. M. Wilson, and the following members were nominated: Mr. W. Jackson Young (by the President), Messrs. J. W. Burgess and J. D. McLaughlan (by Major J. G. MacGregor), Mr. James Murray (by Mr. W. W. Peggie), Mr. D. R. Macrae (by Professor Linton), Mr. E. R. Corrigall (by H. M. Wilson), Mr. A. W. Taylor (by Professor Mitchell), Mr. W. Harris (by Mr. A. Gofton), and Mr. J. Rorrison, by the Secretary.

Election of Office Bearers

President.—Mr. Esmond Brown proposed proposed Major A. Spreull as President for the incoming year. He said that Major Spreull had for a long time been a member of the Division, but had never accepted office, as his practice was situated so far from Edinburgh and he had not had the time he thought necessary to devote to the Division. He had spoken to Major Spreull who had expressed his willingness to accept office for a year. This proposal was carried with acclamation.

The following remaining office bearers were also unanimously elected:—

Vice-Presidents.—Professor Mitchell and Mr. H. M. Wilson.

Members of Council.—Major J. G. MacGregor, Dr. J. Russell Greig, Mr. G. R. Jamieson and Mr. D. Cameron.

Hon. Secretary and Treasurer.—Mr. J. N. Ritchie.

Hon. Auditors.—Professors Mitchell and Linton.

Paper.—Major G. W. Dunkin then presented his paper on "Johne's Disease: It's Economic Significance and Early Detection." Major J. G. MacGregor opened a discussion in which several members participated. [Major Dunkin's paper, and a report of the discussion and the essayist's reply thereto, are reproduced at the commencement of this issue.—Ed., *V.R.*]

Votes of Thanks.—Professor Boddie, in moving a vote of thanks to Major Dunkin, said his feeling was that the paper was all too brief although it had occupied about the usual time of such papers. It was one of the most interesting papers he had heard presented to the Division and he thought that the vote of thanks should should be carried with more than usual enthusiasm.

The meeting responded most heartily.

The President now rose to say that he wished to propose that the Royal (Dick) Veterinary College authorities should be thanked by the Division for allowing that meeting, and those previously held during his term of office, to be held in the College buildings. The Division was greatly indebted to the College for the facilities that were afforded. Mr. Nairn expressed agreement with the President and proposed that the Secretary be instructed to send a letter of appreciation to the Royal (Dick) Veterinary College.

Professor Mitchell said it was the usual custom to accord a vote of thanks to the chairman. He felt it a privilege to be allowed to do so, and he had also to thank Mr. Brown for his good work as President for the last two years. Mr. Brown had carried out his duties with extraordinary charm and all the proceedings had gone most smoothly. He wished, then, on their behalf, to express their great indebtedness to Mr. Brown for his work during the past two years, and unfortunately he must also express their regret that Mr. Brown was no longer to be with them in Edinburgh, but he hoped that their retiring President would visit them there at a future date.

In thanking the meeting, Mr. Brown said that he had enjoyed his term of office. It was only to be expected from one who held such a post as he did, that his stay in Edinburgh could not be very long and he appreciated very much that the Division had elected a "a bird of passage" for its President.

There being no other business, the meeting terminated.

J. N. Ritchie, *Hon. Secretary.*

ROYAL COLLEGE OF VETERINARY SURGEONS

Membership Examination, December, 1934

LIST OF SUCCESSFUL CANDIDATES

(*Continued from page* 1547.)

Edinburgh.

FIVE YEARS' COURSE

1st Examination.

Anderson, W. R.
Bolton, S. R.
Christie, David.
Crooks, S. J.
Cruickshank, J. S.
Curley, W. A. (B)
Graham, G. D.
Jack, Alex. (B)
Kneller, Frank.
Lawson, John. (B)
Millar, P. G.
*Milne, A. H.
*Newhouse, James.
Parker, Eric.
Russell, G. H. H.
Taylor, Alex.
Twiss, A. F.
Twizell, C. W.
Watson, Robert.
Williams, G. A. H.
Young, Archibald.

(B) Denotes credit in Biology.

2nd Examination.

Byrne, F. A.
Clouston, D. S.
Grussell, C. S.
Haggie, W. G.
Latta, R. H. J.
Leason, Arthur.
Mahamooth, T. M. Z.
Simison, J. T.
Wood, S. W.

FOUR YEARS' COURSE

Class B.

Caldwell, D. W.
Finlayson, John.
Gardiner, Ronald.
Leask, D. E.
Morris, L. T.
Muir, R. O.
Storey, John.

Class C.

Anderson, T. S.
Bain, Donald.
Bannister, Philip. (H)
Bryson, D. K.
Coates, J. A. R.
Dickson, Campbell.
Dunbar, T. G.
Elphick, T. B.
Ferguson, H. N. (H)
Foggie, Angus.
Goodall, E. W. (M/M)
Gordon, J. G.
*Keith, N. W.
Kellas, H. N. (H)
MacGranaghan, J. A.
Macleod, A. W.
Macleod, Murdo.
Macmaster, D. B.
Macpherson, D. J.
Milne, James.
Ritchie, A. F. (H)
Senior, V. E.
Serebrisky, Boris
Thomson, P. B. (H)
Weir, A. W. A.

(M/M) Denotes credit in Materia Medica.
(H) Denotes credit in Veterinary Hygiene.

Class D.

Anderson, A. H.
Binns, H. R.
Bowman, R. W.
Clunie, R. N.
McDougall, K. D.
MacGilvray, A. J.
Mackay, John.
Milton, J. A.
Misra, U. C.
Pearce, J. W. R.
Sumpter, Howard.
Withers, A. R.

* Denotes 2nd Class Honours.

London.

FIVE YEARS' COURSE.

1st Examination.

Brown, R.
*Bunker, J. A.
Cooke, R. F.
Edwards, F. V.
Gardner, J. C. A. (B)
Garnett, Orme, A. (B)
*Harrop, A. E.
Hewer, J. D. R.
Hughes, A. P.
Jones, Miss K. M.
Moon, G. H. J.
Neal-Morris, R.
Nixon, G.
Richards, J. A. (C)
Richardson, D. A.
Roberts, Miss D. M. P.
Sparrow, L. H.
Spilsbury, A. J.
Stromsoe, R. O.
Thompson, J. D. H. (C)
Thomson, Miss M. Y.
Wood, T. B.

(C) Denotes credit in Chemistry.
(B) Denotes credit in Biology.

2nd Examination.

Bishop, W. H.
Bowett, J.
Ellis, A. A. B.
Green, A. R.
Harries, D. C.
Hiles, H. J.
James, C. D.
†James, J. P.
Lake, D. A.
Moller, A. W.
Neve, Miss H.
Roe, J. E. R. (H)
Spratling, F. R. (P)
Walpole, R. O. W. (P)
‡Bonallo, T. G. (H) (A/H)
‡Woods, Miss C. A.

(P) Denotes credit in Physiology (including Biochemistry.
(H) Denotes credit in Histology and Embryology.
(A/H) Denotes credit in Animal Husbandry, I.
* 2nd Class Honours.
† 1st Class Honours.
‡ Liverpool School of Veterinary Science students.

FOUR YEARS' COURSE

Class B.

Buxton, J. C.
Drewett, E. P. M.
Kirk, M.
Leggett, Miss M. G.
Peyton, A. W.

Class C.

Andrew, A. H.
Frost, Ian.
Gates, G. M.
Green, P. N. C.
Haegler, Miss J. C. V. (H)
Ham, H. E. C.
Hickman, Miss A. V. E.
*John, F. V.
Knott, G. K. L. (M/M) (H)
Lamb, E. G. (H)
Lower, Miss S. F.
Morant, Miss K. M.
Morgan, A. T.
Morgan, R. P.
Moss, Miss J. E. M.
Phillipson, A. T.
Stenning, W. W.
Walther, A. L.
Wright, R. A.

* Denotes 2nd Class Honours.
(M/M) Denotes credit in Materia Medica.
(H) Denotes credit in Veterinary Hygiene.

Class D.

Balcombe-Brown, D. R.	Ince, E. B.
Copithorne, Miss A. M. B.	Newey, W. H.
De Bruyn, R.	Parsons, C. R.
Foster, A. E. C.	Sahi, P. S.
Haselden, C. S.	Shenton, Arthur.
Holman, Miss R. E.	Sherbrooke, D.
How, P. F.	Strachan, Miss I. C.
Hudson, E. W.	Uvarov, Miss O.
Hughes, L.	Webber, R. P.

Liverpool

Five Years' Course

1st Examination.

Limont, A. G.

Four Years' Course

Class C.

Brock, Miss D. M.	Ransome-Wallis, Miss C. S. J. R. H.
Cubby, J.	Roberts, D. T.
Henderson, Miss R. M.	Setterfield, R. R.
Hickman, Miss V. C. N.	Thompson, Miss P. E. M.
Livingstone, J.	Wenner, Miss A. P.
Massey, Miss K. M.	Yates, Miss M. E.
Needham, A. J. E.	

Class D.

Cook, Arthur.	Thomson, Alexander.
Edwards, G. B.	Tillemont-Thomason, Miss V. de C. C.
Hepworth, L. D.	Tweed, D. J.
Kay, O. C. M.	

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LIVERPOOL SCHOOL OF VETERINARY SCIENCE

Degree of B.V.Sc.
(*Old Regulations*)

Second Examination: *Part I.*—Young, S. C.; *Part II.*—Ormerod, Miriam R.

Third Examination: *Part I.*—Massey, Kathleen, M., Ormerod, Miriam R.; *Part III.*—Brock, Doris M., Henderson, Ruth M., O'Neill, P. A. F., Ormerod, Miriam, R. (1, 2.); Setterfield, B. R.

Final Examination: *Part I.*—Morton, Dorothy R., Tillemont-Thomason, Victoire de C. C.

Degree of B.V.Sc.
(*New Regulations*)

Second Examination: Bonallo, T. G. (3), Jones, S., Kieran, H., Shirley, G. N., Tutton, E. A.

1. Distinction in Materia Medica and Pharmacy.
2. Distinction in Pharmacology.
3. Distinction in General Embryology.

IN PARLIAMENT

The following questions and answers have been recorded in the House of Commons recently:—

Milk Reorganisation Commission

Mr. Dingle Foot asked the Minister of Agriculture when the proposed Milk Reorganisation Commission will be appointed; and how soon it is likely to commence its examination of the working of organised milk marketing in Great Britain?

The Minister of Agriculture (Mr. Elliot): I am not yet in a position to make any further announcement on this subject.

Mr. Foot: Can the right hon. Gentleman say when he will be in a position to make an announcement?

Mr. Elliot: No, I am afraid I cannot say.

* * * * *

Milk Act (Expenditure)

Captain Heilgers asked the Minister of Agriculture whether any portion of the £750,000 authorised to be spent in the next four years under the provisions of the Milk Act is being utilised at the present time; and, if so, to what specific purpose is it being allocated?

Mr. Elliot: The answer to the first part of the question is in the negative. My right hon. Friend, the Secretary of State for Scotland, and myself, acting in conjunction under Section 9 of the Milk Act, 1934, have now arranged to fix February 1st as the appointed day from which the expenditure of the sums provided under that Section is to begin. On that day schemes will come into operation for encouraging the establishment of herds free from tuberculosis by the offer of a bonus on milk produced from such herds.

* * * * *

Foot-and-Mouth Disease

Mr. George Griffiths asked the Minister of Agriculture how many cattle and pigs have been destroyed in the West Riding of Yorkshire in this last outbreak of foot-and-mouth disease?

Major G. Davies: I have been asked to reply. The numbers are 61 cattle and 110 pigs.

* * * * *

Livestock (Slaughter)

Mr. H. Williams asked the Minister of Agriculture whether, before coming to any decision as to the establishment of any scheme for the centralised slaughtering of livestock, he is prepared to receive a deputation from the numerous trade associations concerned, both in slaughtering and in the utilisation of animal by-products?

Mr. Elliot: My hon. Friend will be aware that in the White Paper on the Livestock Situation (Cmd. 4651) presented to Parliament last July, it was announced that it would be an essential function of the permanent Commission contemplated in the Government's long-term policy to co-operate with all interests concerned in a reform of marketing and slaughtering systems, with a view to greater economy and efficiency, which the Government regard as indispensable to the permanent prosperity of the livestock industry. The problem of centralised slaughtering of livestock is being carefully examined and I shall be happy to hear the views of the interests concerned in due course. A deputation such as my hon. Friend suggests would however be premature at the present time.

Mr. Rhys Davies: When the right hon. Gentleman is considering the effect upon trade associations, will he bear in mind the associations of the slaughtermen who are engaged in these slaughterhouses?

Mr. Elliot: I have said that I shall be happy to hear the views of the interests concerned.

Notes and News

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events

Dec. 31st.—Meeting of the Editorial Committee, N.V.M.A., at 2, Verulam Buildings, Gray's Inn, W.C.1, at 4 p.m.

Jan. 3rd.—Meeting of the Central Division, N.V.M.A., at Conway Hall, Red Lion Square, W.C.1.

Jan. 7th.—Meeting of the Derbyshire Division, N.V.M.A., at Nottingham.

Jan. 8th.—Meeting of Council, N.V.M.A.

Jan. 11th.—Meeting of Council, R.C.V.S.

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"N.V.M.A." MOTOR INSURANCE SCHEME

We are glad to announce that the increased rates of premium for motor insurance which the large majority of Insurance Offices are imposing as from January 1st next, will not apply to "N.V.M.A." policies, which will continue to be issued at the present printed schedule rates of premium, without regard to the district in which members reside or use their cars.

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Personal

RETIREMENT OF MR. F. A. VERNEY, C.B.E., F.R.C.V.S.

Basutoland Tributes

The *Basutoland News* of September 25th devotes a considerable proportion of its space to the retirement of Mr. Frank Arthur Verney, C.B.E., F.R.C.V.S., from the Principal Veterinary Officership of the Territory.

In the course of a three-column editorial appreciation of Mr. Verney's work, this paper says: "Among the men who will long be remembered in Basutoland for the services they have rendered to the territory and for their contributions to its welfare and progress is Mr. Frank Arthur Verney, C.B.E., F.R.C.V.S., who retires from the position of Principal Veterinary Officer in the Basutoland Government service on pension at the end of this month. Mr. Verney has filled this position for many years with distinction, and apart from his actual work as a veterinary surgeon, and his efforts to improve the livestock of Basutoland by importing high grade animals, his successful campaign against scab will remain a monument to his memory. The task was colossal, and the difficulties which beset such an undertaking were enough to have daunted anyone, for not least among these difficulties was the ignorance, suspicion and apathy of the chiefs and the people for whose welfare the scheme was inaugurated. The way in which this campaign was undertaken and carried out is too well known to need recapitulation here, but we feel that now the time of his retiral has come, Mr. Verney has the fullest right to enjoy that feeling of satisfaction which comes from having successfully carried out a long and arduous task.

"Mr. Verney was born at Blockley, Worcestershire, England, on March 3rd, 1874, and was educated at King Edward VI Grammar School, Stratford-on-Avon. He qualified at the Royal College of Veterinary Surgeons in 1896 and was awarded five silver medals, three bronze medals, and the FitzWygram prize. On coming out to South Africa he became Veterinary Officer to the Government of Natal, served through the South African War as a Lieutenant in the Natal Carbineers, was mentioned in despatches, and gained the Queen's Medal with three clasps. At the conclusion of hostilities he joined the Basutoland Government Service where he has remained ever since. His many friends will be glad to hear that he does not propose spending his retirement overseas, but has bought a small farm in Griqualand East where he intends to settle down.

"In recognition of Mr. Verney's services as principal veterinary officer in Basutoland, he was awarded an O.B.E. on the occasion of the King's Birthday in 1925, and the further distinction of Commander of the same Order on the King's Birthday in June, 1932. He has written fairly considerably, his publications including many articles on stock diseases in South Africa. Mrs. Verney was awarded the M.B.E. many years ago for distinguished War Service.

Addresses of Farewell

"Prior to their departure from Basutoland this month Mr. and Mrs. Verney have been the recipients of addresses of farewell and have been entertained at various farewell functions. The Basutoland Chamber of Commerce presented him with a set of golf clubs as a mark of appreciation and esteem, and he was addressed by the European members of the Department of which he was head, and then by the members of his Native staff, who had the highest respect for him. He received an address of farewell from the Native Civil Servants of the Basutoland Government, the Basutoland Mounted Police, and the Basutoland Progressive Association, all paying splendid tributes to him for his services to the territory during his term of 26 years, wishing both him and Mrs. Verney a long and happy retirement.

"These expressions of respect and appreciation from the Native bodies are not surprising when it is remembered that Mr. Verney, more than any other Government official, has travelled throughout the length and breadth of Basutoland, in the lowlands and the mountains, from Maseru to Mont-Aux-Sources, and from east to west, in the prosecution of his duties, and has thus had a rare opportunity of getting to know most of the important chiefs and headmen through personal contact. Furthermore, by reason of his forceful personality and enthusiasm for his work he has been looked upon as an outstanding personality, who has worked with the Basuto for the Basuto, with their interests always wholly at heart. No wonder his departure from Basutoland is regarded by the Basuto with the greatest regret; yet there is no doubt that the help and advice which he has given during his long term of service will continue to bear fruit long after he has gone, for he has instituted measures for the improvement of the country and its livestock that cannot fail to ensure progressive results."

* * * * *

R.C.V.S. OBITUARY

Andrew, Hugh. Montague Street, Borough, S.E.1. Graduated Edinburgh, June 8th, 1906; died December 15th, 1934.

TRIBUTE TO THE LATE PROFESSOR GAIGER

At a meeting of the Liverpool University Council a resolution was passed in connection with the death of Professor S. H. Gaiger, William Prescott Professor of Veterinary Pathology in the University.

It placed on record the council's high appreciation of the distinguished and devoted service he rendered to the University during the eight years of his tenure of the chair. To Mrs. Gaiger and daughters the council expressed sympathy.

* * * * *

PROFESSOR P. J. CADIOT (1858-1934.)*

Pierre Juste Cadiot was born on July 13th, 1858, at Battigny (Meurthe-et-Moselle), and he entered the Alfort Veterinary Institute in October, 1875. During his four years' course he was at the head of his class. Nocard, the teacher of Pathological Surgery, noticed his intelligence, his love of study and his application to work, and engaged him as lecturer. Three years later he was promoted to a professorship. In 1888 the chair of surgery became vacant, Nocard having entered the Sanitary Police Service, and Cadiot was appointed to it. He was under 30 at the time. In 1900, Professor Trasbot retired and Cadiot took his place as Professor of Pathology. Finally, in 1920 he became principal of the college, taking the place of M. Vallée. In 1924 he expressed his desire to retire, as work had ended by undermining his health. He found himself obliged to leave the Alfort Clinic which he had inspired for so long, but he continued to work obstinately to the end. He was last seen, markedly changed by illness, at the opening of the "Maison des Vétérinaires" where he conferred for a short time with the President of France, his compatriot.

Cadiot was an active member of numerous societies; since 1881 he participated in membership of the Société de Médecine Vétérinaire, and his speech delivered on the occasion of the Society's Fiftiethr Anniversary, is still remembered. In 1887 he was elected to membership of the Société Centrale, and became president in 1897. He was a member of the Société de Thérapeutique, Honorary Associate of the Royal College of Veterinary Surgeons, and of the Veterinary Institute of Dorpat; finally, in 1905, he was elected to the Trasbot Chair at the Académie de Médicine, which he attended with remarkable regularity until his death.

In spite of the heavy responsibilities of his academic position, Cadiot wrote a large number of works. The major part of these comprise didactic works which are conspicuous by the clarity of his ideas and his profundity of erudition.

As early as 1892, in collaboration with Ries, he published an excellent translation, accompanied by copious personal annotations and a bibliography, of the Treatise on Pathology and Therapeutics by Friedberger and Fröhner. In 1898, in collaboration with Almy, he published his principal work, "A Treatise of Surgical Therapeutics." Three editions were published and translations into English and Italian served to acquaint these countries with the advance of veterinary science in France.

Amongst his other publications were:—

"Etudes de pathological et de Chinique" (1899); Médecine Canine" (1901) in collaboration with M. Breton; "Précis de Chirurgie Vétérinaire" (1903), and "Traité de Médecine des Animaux domestiques" (1925) with Lesbouyries and Ries.

His greatest interest was directed to surgery and he concentrated upon perfecting the technique of many operations. He was the first in France to extirpate the paralysed arytenoid cartilage in "roaring." He later modified Möller's technique, but finally discarded it in favour of Williams' operation.

He made many modifications of the operation of ovariotomy in horses and cattle, and replaced the bulky apparatus of Charlier and Collins, by the guarded blade and the écraseur of Chassagnac. Finally, he carried out important research into the technique of castration of the cryptorchid horse.

Whilst his work in experimental pathology was limited, he revealed himself to be a very accurate observer. During his whole career he was interested in tuberculosis. His investigations were mainly carried out on the diverse clinico-anatomical manifestations of the disease in carnivora. His descriptions of osteo-tuberculosis in the dog and tuberculous ulceration of the face in the cat, have remained classical.

Cadiot's publications on cancer cannot be disregarded. Not only did he add to the knowledge of this branch of pathology by his numerous descriptions of tumours, but in addition he endeavoured to solve the problem of neoplasmic grafts.

It is appropriate to mention his clinical studies on equine pneumonia, the use of barium chloride in equine colic, and canine lymphadenitis.

The time will come when others who have known him better, will render homage to his qualities as a professor, to his skill as a diagnostician, to the precision of his teaching capacities, and his extraordinary surgical talent.

Without doubt his original character, accurate judgment, unimpeachable scientific probity, and lasting friendships, will be remembered.

He leaves us a great example of devotion to veterinary science, and (says Professor Robin) I was given the task of laying on his tomb this token of our respect and the assurance that the Alfort College will faithfully keep his memory.

* * * * *

SWINE FEVER IN SUFFOLK

At a recent meeting of the Suffolk Diseases of Animals Joint Sub-Committee, alarm was expressed at the large increase in the number of cases of swine fever in the county, and it was decided to ask the adjoining counties to join with them in measures to stamp out the disease.

The Clerk (Mr. Cecil Oakes) said that during the quarter there had been 313 cases reported, of which 31 had been confirmed and 45 awaited determination. Of the confirmed cases 21, affecting 20 parishes, were in East Suffolk, and 10 affecting 10 parishes in West Suffolk. This record, he said, was the worst they had had for a long time.

Mr. G. S. Staunton (Chief Constable of East Suffolk) said that of the recent cases in September 19 were in East Suffolk, and of these only four were cases in which the pigs were brought from premises, the remainder coming from markets.

The Chairman (Mr. C. C. Smith) said the position was really very disappointing and alarming, because people had made contracts in connection with the bacon scheme and with their large pig population, with disease distributed practically evenly all over the county, there might be very damaging effects.

* Abstract of Obituary Article on Professor P. J. Cadiot, by Professor V. Robin. *Recueil de Médecine Vétérinair*, November, 1934.

Mr. A. H. F. Harwood asked if the same regulations were in force for moving pigs into the county as existed in the county itself.

The Clerk replied that unfortunately they had no power to restrict movement into the area, though he believed the Ministry could grant such power.

Mr. G. S. Staunton stated that they had such regulations at one time, but the Ministry had finally withdrawn them.

Mr. Isaac Goodwin said it was time they had control over the pigs coming into the county from Norfolk, for just over the border there had been a number of bad cases of swine fever and they still existed.

In reply to a question Captain Brown, one of the Ministry's officials, said the figures for Norfolk were higher than for Suffolk and the disease was also widespread.

After some further discussion it was decided to ask the adjoining counties to co-operate with Suffolk in an endeavour to stamp out the disease.

A letter was read from the Suffolk County branch of the National Farmer's Union with a recommendation that no pigs should be allowed to be sold from infected premises except for slaughter for a period of six months after restrictions had been withdrawn from the premises.

The Clerk remarked that such a proposal would involve legislation, for the Ministry had no power to impose it.

* * * * *

Remarking that it was one of the worst cases of cruelty which had ever come before the Court, Sir Godfrey Baring (Chairman) at Ryde (I.O.W.) Petty Sessions imposed fines and costs totalling £38 3s. on Harry Guy, a Wroxall farmer, who was summoned by the R.S.P.C.A. for cruelty. Guy was fined the maximum of £25, and ordered to pay £3 3s. costs, for causing unnecessary suffering to a cow, and fined £10 for cruelty to a horse. It was stated that the cow had a dislocated leg and its bones could be heard grating together when it walked about. The horse was lame and had ringbone. Both animals had to be destroyed.

Correspondence

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

All correspondence must bear the name and address of the contributor for publication.

The Editor does not hold himself responsible for the opinions of his correspondents.

* * * * *

TESTING FOR UNCONSCIOUSNESS AFTER AN ELECTRIC SHOCK

To the Editor of The Veterinary Record

Sir,—It has been definitely proved that the tests of consciousness used in chloroform anæsthesia cannot safely be assumed to be valid in the case of an animal or a person who has been immobilised as a result of an electric stimulation of the brain. The matter is of great importance because, as a result of the Slaughter of Animals Act, electric immobilisation is being extensively used in the slaughter-house as an alleged anæsthetic; and its use for operations, both veterinary and experimental, has been proposed.

The object of this letter is to point out that there exists a strong tendency to stifle enquiry into this unsettled question, and to discourage further investigation by making statements which imply that electrolethalling has been proved to cause genuine anæsthesia. It is not difficult to explain this desire to brush aside unsettled questions, for there are strong motives for desiring to believe that electrolethalling, as practised in the slaughter-house, is humane.

Many wild theories have been put forward with the object of explaining the observed phenomena in accordance with the wishes of those who propound them, and objective data on the subject are extremely restricted in their scope.

The following facts appear, however, to be definitely established:—

(1) It is possible to produce, by passing a suitable electric current through the brain, a nightmare state in which the subject retains his senses but appears to an external observer to be completely unconscious, the pupil reflex being absent. The conditions under which this state can be produced have not been satisfactorily delimited, but they appear to approach those employed in the slaughter-house. The requisite range of conditions, whatever it may be, is one which sometimes although very rarely occurs in electrical accidents.

(2) A weak interrupted direct current produces the same objective phenomena as sinusoidal (electrolethaller) current 20 times stronger as read with an ammeter. Thus it is found that to get the desired objective effects on pigs in the slaughter-house, the sinusoidal electrolethaller current must lie roughly between half an ampere and one ampere, while Regensburger gets similar results with 10 per cent. interrupted direct current of from 31 to 53 milliamperes.

(3) Controlled experiments on human beings have not been carried quite up to the point where the subject fails to recover his mobility immediately on the cessation of the current. In slaughter-house practice the current-strength lies just above this point, and it must have done so in the case of those rare electrical accidents in which the nightmare state persists after the accident.

(4) Leduc submitted himself to interrupted direct current up to four milliamperes, but failed to reach unconsciousness, although his assistants supposed him to be completely unconscious for 20 minutes. He felt sure, however, that if the current had been raised a very little higher unconsciousness would have ensued. Dr. J. Hertz in Paris therefore repeated the experiment on incurable invalids with currents up to 25 milliamperes (or 18 milliamperes where the "on" period was 10 per cent.) but Leduc's prediction was not fulfilled. The subjects failed to pass beyond the nightmare state. They exhibited permanent dilation of pupils and were unable to respond to stimuli, but they retained their sensibility.

(5) Breathing was sometimes inhibited during the nightmare state in Hertz's subjects, and in some victims of electrical accidents. Zimmern in particular refers to an accident in which the victim knew that he could not breathe voluntarily and dreaded that artificial respiration might be abandoned prematurely.

(6) The muscles in Hertz's subjects were sometimes contracted and sometimes relaxed. The absence of squealing in electrolethalled pigs is not therefore necessarily due either to muscular contraction or to unconsciousness. It may, for all we know, be due simply to the nightmare state.

I intend to publish before long a more detailed statement of the above points.

I am,
Yours faithfully,
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